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*THE  
ANTIVIVISECTION  
QUESTION.*



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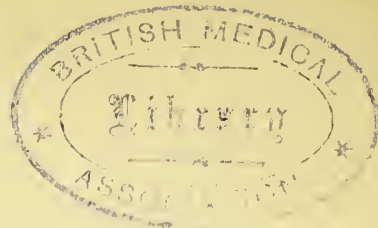


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# "THE ANTI-VIVISECTION QUESTION."

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THE MORAL ASPECTS  
OF  
VIVISECTION.

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BY

FRANCES POWER COBBE.

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# THE MORAL ASPECTS OF VIVISECTION.

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THE notion of the extreme tenderness and sensibility of early youth, especially in the male human creature, is almost as purely conventional and remote from experience as the poetic fiction of an English spring, all sunshine and flowers. That type of cruelty which comes of ignorance and recklessness alike of their own suffering and that of others, and wherein Curiosity, not Malice, is the prevailing motive, is at its worst in adolescence; and only as years go by, and observations multiply, and the experience of pain ploughs up the heart, does sympathy grow by slow degrees, till at last, as Sir Arthur Helps has pointed out, it may be predicted with certainty that a jury of old men will take the most merciful view of every case brought for their verdict.

On the larger scale of nations and of humanity, the same process of initiation into the mysteries of suffering and of sympathy has gone forward, and we now behold society so far emerged from the age of barbarism that an English gentleman would no more insert now-a-days in his account book (like the pious and charitable Alleyne) an item for "Whipping of y<sup>e</sup> Blind Beare," than the stream of traffic would proceed peacefully over Westminster Bridge were a Fenian's head to be exhibited on the cornice. The influences of civilization, of religion, of cultivation—in short, of all kinds, mental and moral—have softened, like the rain of heaven, the crust of our dry, hard world, and there is every reason



to hope that, unless arrested or perverted, they will trickle downwards and permeate the whole soil of human society, till the "desert shall rejoice and blossom as the rose." When we think of what earth might become were the tiger passions within our race to be bred out at last, and the divine faculty of love and sympathy to attain its obviously intended development, it would seem as if efforts for the improvement of our physical or sanitary conditions, or for the advance of arts, science or laws, were scarcely worth making, in comparison of any step which should bring us nearer to such an age of joy.

But it is by no means an even and unbroken line of progress which we can flatter ourselves our race is pursuing towards a millenium of mercy. While the general stream of tendency is undoubtedly in that direction, and may indeed be dimly traced so to have been since the beginning of history, yet there are certain counter currents observable which are setting altogether in an opposite direction. The great wars which the gigantic armies of modern European statecraft have made possible, and the dire legacy of national hatred which such conflicts bequeath to unborn generations, present undoubtedly alarming obstacles in our road. It may excite surprise, perhaps ridicule, if I point to another and apparently comparatively insignificant feature of modern life, as no less threatening in another way. If, while a patient seems to be recovering from a long malady, a new and strange symptom should suddenly exhibit itself, the physician would unquestionably hold that there existed considerable latent danger. Much such a rapid development of peculiarly acrimonious moral disease appears to be taking place in that part of our social body which is just now the seat of highest vitality.

Science is undoubtedly at this hour the ruling passion of the age. What the Chase, War, Art, and Learning, have been in various past epochs, so is the pursuit of Physical Knowledge in our generation. The triumphs thereby achieved have dazzled us, as the people of France

were dazzled by the victories of the first Napoleon; and even such of us as understand but very imperfectly wherein these boasted conquests consist, are ready, like our betters, to cast our palms in the way of the new Messiah and shout "Hosanna!" albeit we have too seldom reason to believe that he "cometh in the name of the Lord." If any men may claim to be more than others the representatives of the period, in the "foremost files of time," it is our men of science. Whether the rest of mankind will hereafter meekly follow in their mental track yet remains to be seen; but it is certain that no statesmen, no divines, no metaphysicians offer themselves at the present day with so high pretensions to become our Moses and Aarons, and to lead us—it may be into a Canaan, it may be into a wilderness. What is done, thought, felt, by the men of science is of almost incalculable weight in determining the proximate tendencies of thousands of lesser spirits—the direction to be taken by all those innumerable minds which have no motor force of their own, but follow the *Zeit Geist* whithersoever he goeth. A peculiar and abnormal manifestation of sentiment among the scientific class, or even of a certain small section of it,\* is, therefore, quite otherwise significant than the rise of a silly or cruel fashion among the *jeunesse dorée* of the clubs and the race-course, or the prevalence of an idle delusion in certain urban coteries.

Such manifestation is, I apprehend, actually observable in the very rapid extension of the practice of painful Experiments on Animals, to which some prominence has lately

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\* Probably the great astronomers and geologists would be the very last to countenance such practices as those to which reference is made. Mrs. Somerville's expressions of abhorrence of them are repeated many times in her "Recollections;" and the late venerable Sir Charles Lyell, a short time before his death, answered the writer's inquiries as to his opinion with a shudder of disgust, and added: "I do not even like to think of all the *insects* I killed when I was a young man and made my entomological collection. Of course I did it with every precaution to save them pain, but I do not like to remember it now."



been given in public discussion. In the present paper I purpose studiously to avoid detailing, or even alluding specifically to, any of the multiform horrors which are classified under the name of Vivisections. But without harrowing the reader by descriptions of them, I shall merely point to such experiments as those singularly ingenious varieties of torture which fill the large volumes of French, German and English physiological Handbooks, and suggest to my readers the inquiry; Whether this sort of thing be not strangely at variance with the tone of thought and practice which at present prevail in other departments of human activity; and whether such books, for example, as these Catechisms of the Art of Torture, do not even stand unique in the literature of the world? While our legislation tends to an almost excessive lenity towards criminals; while our Art and our Letters become yearly more refined and fastidious; while our manners grow more uniformly courteous towards all classes; and while in a very special manner, we are beginning to take a new interest in the intelligence and affections of the lower animals, and to visit their cruel treatment with condign punishment—in the midst of all this humanising process we suddenly find a break, a pause, nay, a very decided retrograde movement. It is at least fitting that we should inquire into the meaning of this strange and startling phenomenon. Let us suppose, to aid our imagination, that something analogous to vivisection were going on in some other department of modern activity. There are legends that *dilettante* sovereigns in the Cinque-cento age (when Art was supreme as Science is now), were so anxious to aid the great painters at their work, that they beheaded men to serve for models for John the Baptist, and crucified boys to enable them to verify the details of Calvary. Were a similar expedient suggested in our day in the schools of the Royal Academy, can we conceive the tempest of public indignation which would gather round the head of the enthusiastic Art Director who deemed the “end” of producing a noble and religious picture so sacred that all “means”



were lawful to attain it? Or suppose that, for the sanitary interests of the community, it were proposed to stamp out small-pox by administering poison to every person seized with the disease. Is it imaginable that such a scheme would obtain a hearing? Or (to come to closer analogies) let us fancy that, in the progress of gastronomy, an experiment, to which we had not become hardened by custom, and no less cruel than the production of *foie gras*, or the old process for making white veal, were suddenly to be introduced from France; or that sportsmen adopted a fashion of merely mangling their game, or using red-hot or poisoned shot. How horrible and startling should we pronounce the novel indulgence of tastes so morbid and pastimes so atrocious!

Yet such indifference to suffering as we have imagined in our hypothetical cases of artists, or sanitary reformers, or cooks, or sportsmen, would, on the whole, be less monstrous and anomalous than the passion for vivisection among the men of science; and this for two noticeable reasons. In the first place, artists, sportsmen, and *bon-vivants*, know comparatively little of the nature and extent of the suffering caused by lacerations of the living tissues, or the production of morbid conditions, while the physiologists understand the matter to a nicety, and have the most perfect acquaintance with every pain which they cause—nay, the causation which is often the immediate object of their ingenious exertions. As the writer of a letter in the *Pall Mall Gazette*, bearing the well-known signature of “Lewis Carroll,” expressed it: “What can teach the noble quality of mercy, of sensitiveness to every form of suffering, so powerfully as the knowledge of what suffering really is? Can the man who has once realized by minute study what the nerves are, what the brain is, and what waves of agony the one can convey to the other, go forth and wantonly inflict pain on any sentient being? A little while ago we should have confidently replied, ‘He cannot do it.’ In the light of modern revelations we must sorrowfully confess he can.” Again, in a still more marked way the acts of the vivisectors are anomalous and

out of character. It is the boast of the school of science to which they belong that it has exploded the old theory that Man is unique in creation, with a higher origin than the brutes, and a different destiny. They give us to understand that God,—or rather the “Unknown and Unknowable,”—has “made of one blood” at least all the *Mammalia* upon earth. Not merely our corporeal frames, but Thought, Memory, Love, Hate, Hope, Fear, and even some shadowy analogues of Conscience and Religion have been traced by the great thinker at the head of this school, throughout the lower realms of life upon this planet; and, in the eyes of most cultivated and thoughtful persons in these days, the claims of a dog, an elephant, a seal or a chimpanzee, to consideration and compassion, are at least as high as were those of a Negro, a century ago in the eyes of a Jamaica planter. To find a number of men of science—disciples, it is believed, almost without exception, of the doctrine of Evolution—themselves pursuing, and teaching their pupils to pursue, trains of physiological investigations involving unutterable suffering to these same “Poor Relations” of our human family, is an appalling phenomenon. That Pope Pius IX. should have refused the late Lord Ampthill’s request for permission to form in Rome a Society for Prevention of Cruelty to Animals, might, perhaps, be understood on the strange ground his response assumed—viz., that it was “a theological error to suppose that man owes any duty to the animal.”\* But that the disciples of Darwin should themselves be the teachers and leaders in a new development of most exquisite cruelty to the brutes

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\* This expression has been perhaps scarcely rightly understood. His Eminence Cardinal Manning who has taken a lively interest in the subject and most importantly served the cause of anti-vivisection, made the following observations as a Member of the Deputation to the Home Secretary from the Society for the Protection of Animals liable to Vivisection:

“I think it greatly to the honour of England that there is a law in the Statute Book punishing cruelty to animals. That law seems to express the

whom they believe to share our blood, our intelligence, and our affections, is indeed a portent of strange and threatening augury. It involves no less than the adoption of a moral theory of boundless application—namely, that the weak have absolutely no claims at all against the strong, but may be tortured *ad infinitum* even on the chance of discovering something interesting to the lordlier race; or for the purpose of better fixing an impression by the sight of their agonies than could be effected by the verbal description of a lecturer.\* “We ask, bewildered,” says a writer in the *Daily News*, “how far then will these apologists of vivisection go in approving of the sacrifice of the weak for the sake of the strong? If it be proper to torture a hundred affectionate dogs or intelligent chimpanzees to settle some curious problem about their brains, will they advocate doing the same to a score of Bosjesmen, to the idiots in our asylums, to criminals, to infants, to women?”

Truly this mournful spectacle of the perpetration of cruelty by those who best understand what is cruel, and of the contemptuous disregard of the claims of the brutes by those who have taught us that the brutes are only undeveloped men, is one to fill us with sorrowful forebodings for that future of our race which, from other quarters, seems to promise so fairly. “The simultaneous loss,” writes one of the deepest and most observant thinkers of the day, “from the morals of our ‘advanced’ scientific men of all reverent sentiments towards being *above* them, as towards being *below*, is a curious and instructive phenomenon, highly significant of the process which their natures are undergoing at *both ends*.”

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great moral principle that people have no right to inflict needless pain. The plea of scientific inquiry and research appears to present the most refined pretext of cruelty in violation of that law. The infliction of needless pain is a moral wrong; and to say that we owe no moral obligations to the lower animals is simply odious and detestable, because a moral obligation is due to their Creator.

\* Prof. Rutherford, at a meeting of the British Medical Association at Edinburgh, expressly defended vivisection on this ground.



Of course events, like the sudden development of physiological cruelties, do not take place without sufficient cause, and are not without some ostensible excuse on the part of those responsible for them. The common passion for science in general and for physiology in particular, and the prevalent materialistic belief that the secrets of Mind can best be explored in Matter, undoubtedly account in no small measure for the vehemence of the new pursuit of original physiological investigations. Then, for the instruction of students in agonizing experiments, other causes may readily be found. Young men at the age of ordinary medical students are, as I began by remarking, filled with curiosity and exceedingly empty of sympathy and pity. An eminent physiologist recently bore testimony to his surprise when a whole class of his pupils trooped out of his lecture-room, on purpose to see the assistant kill a creature which he had considerably intended should be despatched out of sight before dissection. "I remained alone in my chair," he observed, "a sadder and a wiser man." The same keenness of observation, or a memory of their own youthful insensibility, ought to teach all professors of physiology that they are indulging a maleficent tendency which already exists in their pupils' disposition, when they invite mere lads of the Bob Sawyer type to watch their frightful experiments—the more frightful, so much, alas; the more attractive.\* And, further still, the proclivity of the time to

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\* Great indignation was expressed at the above remarks in the first edition of this paper by Sir William Gull and Professor Ferrier before the Royal Commission. Sir William Gull said (*Minutes of Evidence*, 5502) that "he had never seen anything affording the remotest justification of the phraseology" of the passage, and Professor Ferrier (*ibid*, 3350) thought it "a gross libel upon a class."

The opinion of two no less eminent men and more experienced teachers, Professor Rolleston, of Oxford, and Dr. Haughton were somewhat different. Professor Rolleston remarked:

"Kingsley speaks of 'the sleeping devil, that is in the heart of every man,' but you may say it is the lower nature which we possess in common with the Carnivora. It is just this, that the sight of a living, bleeding and quiver-

youthful independence and raw incredulity of the experience of others, adds strength to the desire of students to see with their own eyes the phenomena which their instructors might almost, or quite, as thoroughly convey to them by means of descriptions, and the extraordinarily perfect models and diagrams now available.\* There is nothing intrinsically blameworthy in this wish, which is, perhaps, an integral part of the scientific temperament. But its claims to be indulged, when indulgence means for a sensitive creature exquisite torture, and for the student such satisfaction as he may find in watching it, is another question.

Of the argumentative defences of vivisection more must be said. The chief, I think, is a double-barrelled instrument, aimed at our selfishness (under the grandiloquent name of the Benefit of the Human Race) on the one side, and our bad conscience as regards various kinds of cruelty on the other. The latter, or *tu quoque* argument, which was set forth at large in a semi-jocose pamphlet by the assistant of M. Schiff, and published in Florence under the name of "Gli Animali Martiri," refers us with a sneer to the cruelties of the chase and the shambles, and asks us whether, in a world where such things are done from the very lowest motives, it is worth while to dispute a few victims for those sacred Altars of

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ing organism most undoubtedly does act in a particular way upon what Dr. Carpenter calls, the emotion-motor nature in us. I know that many men are superior to it; but I beg to say that if we are talking of legislation, we are not to legislate for the good, but for the mass who I submit are not always good" (1287).

Dr. HAUGHTON said:

"I would shrink with horror from accustoming large classes of young men to the sight of animals under vivisection. I believe that many of them would become cruel and hardened, and would go away and repeat those experiments recklessly. Science would gain nothing, and the world would have let loose upon it a set of young devils" (1888).

\* And which are so conveyed in other branches of study when their exhibition would cause any serious inconvenience. What chemist thinks it needful to blow up a room to show his pupils the qualities of a detonating powder?



Science which form the furniture of physiological laboratories? The answer to this appeal is not far to seek. One offence does not exculpate another, even if both be morally on the same level. But (as we have just seen) all other cruelties have some excuse in the ignorance or stupidity of those who inflict them, while those of the Physiologist alone bear the treble stigma of being done in the full light of knowledge by singularly able men, and with the calmest forethought and deliberation. And while every other kind of cruelty is falling into disrepute, if not into disuse, this alone is rising almost into the rank of a profession, like a superior sort of butchery. As to the argument that it "does not become people who eat animal flesh to demur to the torture of animals," it would have seemed that no one with common sense could have employed it, had we not found it repeatedly brought forward by the pro-vivisectors as if it possessed withering force. The cattle we use for food exist on the condition that we shall take their lives when we need them ; and in doing so in the ordinary, not unmerciful manner, we save them the far worse miseries of old age and starvation. To *kill* a creature quickly is one thing. To cause it to suffer torture which shall make its existence a curse, is quite another matter.

Finally, for the tediously reiterated but more reasonable reproach, that the opponents of vivisection make no efforts to put down Field Sports, and count among their numbers many fox-hunters, deer-stalkers, fowlers, and anglers—what shall be answered? My reply is that the parallel between vivisection and Field Sports is about as just and accurate as if a tyrant, accused of racking his prisoners in his secret dungeons, were to turn round and open a discussion on the Lawfulness of War. That creatures who chase, and are chased all their days in fields and waters, should have an arch-enemy and pursuer in man, may be differently estimated as ill or well. But it is almost ludicrous to compare a fox-hunt (for example) with its free chances of escape and its almost instantaneous termination in the annihilation of the poor fox when captured, with the slow, long-drawn agonies

of an affectionate, trustful dog, fastened down limb by limb, and mangled on its torture-trough. An old-world passion, which had in its place and use in another form of society, is running to seed in the modern fashion of field sports, such as *battues* and pigeon matches. A new passion which scarcely had existence twenty years ago, is sprouting above ground and showing its bud in vivisection.

Of course the motive of the sportsman, being usually merely sport, contrasts much to his disadvantage with that which the vivisector requires us to believe is his actuating principle. The latter tells us that it is for the exalted purpose of alleviating the sufferings of mankind, which touch his tender heart to the quick, that he puts himself and his brute victims to the pain of the experiments ; whereas the sportsman can only sometimes plead that he kills game for food or to clear the land of noxious creatures ; and must usually confess that he hunts, or shoots, or angles for his own pleasure, health, and amusement.

So far as the present writer's opinion is concerned, these latter motives do *not* justify such pursuits when they entail the death of animals neither hurtful to man nor wanted for his food ; nor do any field sports seem to harmonise with the highest type of cultivated and humane feeling. But the men who follow them may plead at least the excuse of custom and of partial ignorance. Turn we, on the other hand, to those boasted motives of lofty and far-sighted philanthropy which are alleged to spur the vivisector to his ugly work in his laboratory, where no fern-brakes or heathery hills, no fresh breezes or dancing streams, such as throw enchantment round the pursuits of the sportsman, are present to cast any glamour over the process of torture ; and where no chance of escape on the part of the brute, or risk to his own person, may stir his pulse with the manly struggle for victory.

In the first place, I may remark that the mental constitution of a man must be somewhat exceptional who is enthusiastically anxious to relieve the sufferings of unseen



and perhaps unborn, men and women, but who cares in comparison nothing at all for those agonies which are endured immediately under his eye by creatures who according to his philosophy are only a step lower in the scale of being. It verges truly on the gigantic and Promethean to talk of such devotion to the interests of Humanity in the abstract; and when we behold a cultivated and gifted gentleman selecting freely for his life-work the daily mangling of dogs and cats, we are quite at a loss to qualify the grandeur of his voluntary martyrdom. Perhaps it is not very astonishing that homely people, who do not feel in their breasts the vocation for such sublime devotion, should treat the boast of these motives as just a little partaking of the character of moonshine; and suppose, in a matter-of-fact way, that either the vivisector is a perfectly callous man, whose horrid work never cost him a pang,\* or that, if he have any lingering feelings of compassion, he puts them aside in favour of sentiments rather more common in the world than such Curtius-like self-sacrifice. As very few of us would purchase immunity from our own diseases at the cost of the torture of a hundred dogs, we may be pardoned for doubting whether the vivisector who cuts them up (as he assures us) for our sakes, is really more interested on our behalf than we are for ourselves.

I believe, then, that we may not unjustifiably fall back on the conclusion that the real motives of vivisectors are of one or other of two less exalted kinds. The better class we may

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\* I am compelled to testify that in wading through a mass of this Dead Sea literature, I have never been refreshed by a single passing expression of commiseration for the animals, whose signs of agony are recorded merely as interesting features of the experiments; or of regret that the higher scientific objects in view necessitated the prolongation of their tortures. If such feelings exist in the hearts of the operators, I congratulate them on the signal success wherewith they eliminate the slightest trace of them from all their reports. Further, in perusing the books dedicated to the instruction of young students, I have looked equally in vain for any hint of caution, or recommendation to parsimony, in the use of the most excruciating experiments.



credit with a sincere ardour for Science, and that passion which has been well named the Dilletantism of Discovery. And these belong precisely to that order of *hommes à grands desseins*, who are more than any others liable to overstep the bounds of justice and mercy, and who more than others need the invention of the social conscience to check their recklessness. For a lower class we must, I fear, take the word of a man who worked for four months among them, in a laboratory where from one to three dogs were sacrificed daily: "The idea of the good of humanity was simply out of the question, and would have been laughed at; the great aim being to keep up with or go ahead of our contemporaries in science, even at the price of an incalculable amount of needless torture to animals.\*

But the motives which actually influence living vivisectors do not, of course, determine the ethical lawfulness of the practice of vivisection. Our real problem is, whether the highest end to which it *may* conduce, and which they *may* possibly contemplate,—viz., either the direct benefit of mankind by special discovery, or the indirect benefit by the general advancement of science—morally justifies the means whereby it is to be obtained? Does the Good of Man justify the torture of brutes?

At this point we are commonly called upon to recognize with profound admiration and gratitude the immense value of discoveries said to be due to physiological experiment, and we are challenged to say whether, for example, Harvey's Circulation of the Blood, Bell's Double Function of the Nerves and Simpson's Chloroform, were not secrets worth buying at the price of a considerable amount of animal pain? The first answer to this "tall talk" is, that not one of these great discoveries appears to have been really made by the aid of vivisection (Mr. Lawson Tait's "Uselessness of Vivisection"); and that of the other reputed results of such experiments, it may be generally affirmed that they resemble

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\* Dr. Hoggan's letter to the *Morning Post*.

the marvels said to have been wrought by the magicians of Pharaoh, who could *bring* the plagues upon Egypt, but remained quite powerless to *cure* them. Into such controversies, however, concerning the utility of vivisection, I, for one, refuse to enter. I am quite ready to admit that benefit has frequently resulted in all ages from a variety of evil deeds—from Rapine, Perjury, Infanticide, and especially from the sacrifice of “hecatombs” of women to spare “the smallest pain” (or self-restraint) of men. But not on account of such utility do I consider robbery and falsehood, the murder of infants or the prostitution of hapless women, right or lawful. Thus I refuse even to entertain the question, “Whether the torture of animals can be justified on the plea of benefit to humanity.” And for this simple reason: I do not hold the Jesuit principle that “The End justifies the Means,” and I am satisfied that the “Means” of Torture are morally forbidden and unlawful. Bishop Butler’s grand axiom that every sentient creature has an indefeasible claim to be spared pain merely because it is sentient, involves the corollary that the claims of the humblest of such creatures must begin *somewhere*, and cannot be wholly and finally abrogated,—as they would be on the hypothesis that we may push our right to take their lives to the ultimate and indefinitely more remote point of putting them to torture. To make of the existence of a creature such a misfortune and curse as that it should seem better it had never been born,—this is assuredly far beyond the exercise of any prerogative which man can claim for himself, either in virtue of any inherent superiority of his nature, or of any privilege he can conceive to have been granted to him by the Creator.

To affirm, then, as vivisectors are wont to do, that they would freely “sacrifice a hecatomb of dogs to save the smallest pain of a man,” is merely an expression of contempt for the rights of beings feebler than themselves, and which are not yet advanced by evolution to the lordly class of “Bimana,” or the genus “Homo.” What are the moral grounds, we ask, for this astounding new principle of *Race*

*Selfishness?* What is there in Man, either considered only as our fellow-bimanous animal, or as an immortal being whose body is but the garment of his soul, which should make his trifling pain so inexpressibly solemn a matter, and the agony of another animal, no less physically sensitive, insignificant by comparison? Of course we may naturally feel a little more spontaneous sympathy with a suffering man than with a suffering horse. But what is the ethical reason why we should prefer the pain of a thousand horses to that of a single man? Sir Henry Taylor has written noble lines on this matter, going deep into the heart of the question:—

“ Pain, terror, mortal agonies that scare  
 Thy heart in man, to brutes thou wilt not spare:  
 Are theirs less sad and real? *Pain in man*  
*Bears the high mission of the flail and fan;*  
*In brutes 'tis purely piteous.”\**

There is no sight in all the world, to a thoughtful mind, more suggestive of harrowing reflection, no line of the long “riddle of the painful earth” more confounding to the religious soul, than the sufferings of creatures who have never sinned, and for whom (according to common belief) there will be no compensation for injustice in another life. While human pain has its plausible explanations and its possible beneficent results, animal pain seems (at least to our dim eyes) sheer unmitigated evil. I am at a loss then to conceive on what principle, deserving the name of moral, we are to speak and act as if such evil counted absolutely for nothing, while the aches and pains of men are to be so highly esteemed, that the most cruel sacrifices must not be spared, if a chance exist of alleviating them. When we remember who are the teachers who talk about the “hecatomb,” and what is their view of the relationship of man to the lower animals, we discover (as above remarked) that the only intelligible principle on which they proceed is that very ancient one—*le droit du plus fort*. As the main work of civilization has been

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\* Poems; Vol. III. “The Amphitheatre at Pozzuoli.”



the vindication of the rights of the weak, it is not too much, I think, to insist that the practice of vivisection, in which this tyranny of strength culminates, is a retrograde step in the progress of our race; a backwater in the onward flowing stream of justice and mercy, no less portentous than deplorable.

But it is impossible to regard this subject as if it were a mere abstract ethical problem. The vivisection of dull reptiles, and wild rats and rabbits, wherewith the elder generation of students contented themselves, is not alone in question, nor even that of the heavy beasts in our pastures. By some strange and sinister fatality, the chosen victims at present, are the most intelligent and friendly of our domestic favourites—the cats who purr in love and confidence as they sit beside us on the hearth, the dogs whose faithful hearts glow with an affection for us, truer and fonder than we may easily find in any human breast. To disregard all the beautiful and noble moral qualities which such animals exhibit, and coldly contemplate them as if their quivering frames were mere machines of bone and tissue which it might be interesting and profitable to explore with forceps and scalpel, is to display heinous indifference to Love and Fidelity themselves, and surely to renounce the claim to be the object of such sentiments to brute or man. Our human race has for thousands of years trained these creatures to serve and trust us, till their natures are all bent towards us in love and confidence. So deeply rooted, indeed, is this faith in man in the case of the dogs that those who have witnessed the scenes in the laboratories of physiologists testify that the brutes can scarcely be made to understand that it is intended to hurt and kill them, but still try after hours of agony, to lick the hands of their tormentor, and plead with him for mercy with their beseeching eyes when their limbs are all fastened down and immovable on the operating table. Will any one contend that it is not the vilest, the most odious treachery to betray and mock such faith of the dumb creature, and torture him to death for our purposes, while he,—poor brute, whom we despise,—would

die freely to save us from fire or the waves, or perchance expire of grief upon our graves ?

Nay, more ; are we not altogether on a wrong track in arguing this question on the level to which we have descended ? Are not Generosity, Self-sacrifice, the readiness to suffer, the very rudiments of all virtue and all nobility of character ? Are we to go back to the condition of savages—nay rather of those

“ Dragons of the prime  
Which tare each other in their slime.”

when we have boasted we had ascended to the rank of men, of Christians, of English Gentlemen ? Is it a question for a man who aspires to be a brave or worthy, not to speak of a chivalrous or noble person, whether he *may*, within the limits of actual offence, spend his days in putting harmless animals on the rack for the benefit of himself and his kind ? And is it our proper Teachers, those who are fit to guide and train young minds, and direct the tendencies of future generations, who are striving to move us to condone and approve such deeds by cant about the “ Glory of Science,” and by appeals to our miserable, cowardly fears of disease. and our selfish willingness to save “ the smallest pain of a man at the cost of the torture of a hecatomb of brutes ? ”

To me it appears, I avow, that all this reveals a backsliding in feeling and moral aim almost measureless in the depth of its descent. The whole notion of vivisection, as a legitimate exercise and mode of satisfying human desire of knowledge, seems to rest on a radically false conception of the proper ends of human life, and a no less erroneous idea of our relationship to those humbler tribes of creatures who are our fellow-lodgers in this planet-house of the Almighty. As life is more than meat, so are there better things to live for than Knowledge or escape from Pain ; nor is any fact which Science can reveal worth acquiring at the price of selfishness and cruelty. The brutes are not mere toys and puzzles, put here by their Creator and ours that we may freely divert

ourselves by breaking them to pieces to see how His wisdom has made them. They are *fellow-creatures* with ourselves—*sinless* fellow-creatures, be it remembered, who have broken no Divine law and deserved no punishment. If the day ever come (as it is my faith it will, hereafter) when all men shall look back upon the deeds done upon earth, and behold them in their true colours, must it not be that in the agonies of remorse and self-abhorrence in the vivisector's soul will be meted out the measure of justice he has dealt to his victims?

To restore the true moral perspective of acts of cruelty, it is needful that those who have looked on them so closely and familiarly as to have become blind to their enormity should learn how they appear to others whose eyes are yet fresh to the horrid spectacle, and who can take in from their remoter standpoint at once the vaunted bribe of relief to their own maladies, and the price which must be paid for it beforehand, in the pangs of innocent creatures. And as the lay conscience was needed to check the persecutions, inquisitions and Autosda-fe which the priesthood of Religion justified on the high plea of the eternal interests of mankind, so now the same lay conscience is needed to stop the scarcely less barbarous cruelties which that other Priesthood—the Scientific—justifies on the far inferior ground of our bodily welfare.

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# THE RIGHT OF TORMENTING.

BY  
FRANCES POWER COBBE.

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MR. LECKY observes that, "only during the present century have the relations of man to brute been brought within the scope of ethics." It is no wonder that such should be the case; seeing that the sense of moral obligations towards alien races of *men* has only been developed in modern times. The old Jew had scanty mercy for the Gentile, or the Greek for the Barbarian; and all the wild tribes of Africa and America still regard their neighbours much as dogs regard cats. The Red Indian will travel hundreds of miles merely to destroy the villages of the inoffensive Esquimaux. By degrees, however, the blessed lessons of sympathy and mutual obligation have extended among civilized mankind, albeit very imperfectly still between races distinguished by the difference of colour. How many white men in America, for example, really recognise in full the rights of Negroes? What wonder is it then, that the idea of owing any duty or forbearance towards non-human creatures has but quite recently developed itself, and among the highest nations only? In the memory of men now alive, the pen of Sidney Smith occupied the pages of the *Edinburgh Review* with scoffs and sneers at Richard Martin and Lord Erskine for introducing the first legislation in the world against cruelty to animals. That the state of things at that time needed such legislation, we have only to read one of the novels or tour-books of the period, to be assured. Horses were ridden and driven to death by every young "spark" who could afford to hire one; dogs were used cruelly for draught, and tormented in the streets by brutal boys; cats were skinned alive; and the pious Alleyne recorded in his journal that he paid thirteen pence to afford his friends the pleasure of "Whipping the Blind Bear!"

Now it is my contention that the physiologists, immersed in their studies, have just stopped at this point. They are not *before* the age,—as they would have us think, and in the “foremost files of time” ;—but they are *behind* it, and still at the same moral stage as both the classes and the masses were generally in England eighty or a hundred years ago.\*

Meanwhile the rest of mankind have morally advanced, and in no direction more markedly than in that of a newly awakened sense of the duty of kindness to animals. But this sense is as yet vague and scarcely formulated ; and we all feel when we reflect on the subject, that the nature of that duty and the limits of our rights are exceeding difficult to define. Bishop Butler’s great axiom (which cannot be too often called to mind)—that *the simple fact of a creature being SENTIENT, i.e. conscious of pain, makes it our duty to spare it pain*—forms the broad basis for all we have to build. But I confess I heartily wish that that noble thinker—the greatest name in the great Church of England ; the man (be it remembered in this connection,) who said he found no reason why animals should not be immortal,—I wish that this man had gone further, and helped us to define better where to draw the line between cruelty on the one hand, and on the

\* A recent correspondence (May 1894) in the columns of the leading Roman Catholic Journals: the *Tablet*, the *Catholic Times* and the *Universe*,—has revealed the painful fact that there is room to question what is, even now, the teaching of the Church of Rome on this subject. Cardinal Newman, as quoted by the brother of Cardinal Vaughan (*Tablet*, May 19), expressly says, “*We have no duties toward the brute creation,*” and the *Universe* says: “there is no moral law broken by the mere illtreatment of an animal.”

On the other hand Cardinal Zigliara as quoted by Father Lescher was willing to go so far on the road to humanitarian principles as to concede that cruelty, even to a beast, was wrong ; and the views of Cardinal Manning, as repeatedly explained in his speeches on the platforms of the Victoria Street Society, were very distinct, viz: “that though Man does not owe any duty *directly* to the lower animals, he owes it to God, whose creatures they are, to treat them mercifully.”

All these refusals to admit the fundamental moral obligation to refrain from giving undeserved pain to a sentient creature, unquestionably arise from servile and pedantic adhesion to the old scholastic doctrine that Rights and Duties must always be reciprocal, and that, as Animals cannot be strictly said to owe duties to us, we therefore owe no duties to them. The principle, if carried out, would land us in the conclusion that a gentleman need only act as such to other gentlemen, but may lawfully behave towards his inferiors as a snob.

A higher sense might be read into the text “A merciful man is merciful to his beast” than is usually done in well-meant S. P. C. A. sermons. “A merciful man *must* be merciful to his beast.” If mere superiority of nature absolves a Man from the obligation of mercy to a Dog, and he can still be pronounced “merciful” while only so to his equals, then, in calling God “merciful” we really signify that if there were other Gods He would be merciful to *them*. He is absolved from all claims of mercy upon *Man*, who is infinitely further beneath Him than the dog is beneath the Man.



other such impracticable tenderness as that which would spare noxious insects and parasites.

Pondering over these things for years, a method has suggested itself to me of testing the justice of our conduct in any particular towards the brutes. Let me venture to lay it before you, and if it approve itself, we may then take it with us and apply it to this grievous question of Vivisection. Let us suppose that there is an *Umpire* between man and brute—a disinterested and just Spectator, who can alike understand the man's wants and needs, and the inarticulate cries of the humble brute. Such an Umpire I believe, *does* exist, and I name Him, God; but for sake of argument with the physiologist it may be better to speak simply of a hypothetical umpire and Referee. What sentence, I ask, would such a dispassionate Arbiter pass on our general conduct towards the lower creatures?

Let us suppose the man to say, "I wish to rear sheep, cows, swine, fowls. I will take pains that the species be multiplied; and each individual, so far as I can do it, shall be comfortably fed and sheltered, and supplied with the necessaries of a happy animal's existence for a certain number of months or years,—on condition that at the end of that time I am at liberty to take its life in the quickest and least painful way possible; a way far preferable to natural death by old age." Would the Umpire, on behalf of the animal, accept of this bargain? There can be no question he would freely sanction it.

Or suppose the man to say, "I wish to rear horses to drag my plough or carry me on their backs, and dogs and cats to guard my property and be my own fireside companions. I will give them amply sufficient food and water, and I will not overwork my horses, or cause my dog's life to be miserable by chaining it constantly like a criminal. They shall be mercifully killed if at any time their lives become burdensome." Again the Umpire would surely say, "So be it."

Here, then, all our relations to the domestic animals are sufficiently covered and sanctioned. We have only to fulfil our side of the implied contract of careful provision for them while they live and a quick death at the end, to feel that our use of them is morally right, and such as cannot offend their Maker and ours.

Then we have to consider the case of wild animals; and, regarding some of them, the man may say, "They and I are natural enemies, and must

always be in a state of war. I must kill them in defence of my life if they be lions or wolves, or in defence of my property or health if they be vermin or parasites."

Again the Arbiter says: "It is well; these creatures would prey on you if you did not prey on them. You are within your rights in destroying them."

The last case is more difficult. It is that of wild animals, such as really wild game and fish (I am not speaking of deer and pheasants whose case is the same as that of cattle), creatures on which we have conferred no benefit and which threaten us with no hurt if we leave them alone, but which we kill for food. The man pleads, "I need food, and, in devouring these animals I only take my place among the carnivora of the world. Nearly all of them live upon other and smaller creatures. Why should my life, the most valuable of all, not be sustained at the cost of theirs? I engage to kill them as quickly as possible."

The answer to this, I believe, would still be acquiescent, though, perhaps, less completely so than in the former cases. Man is here not the lord of the world, but merely a link in the chain of animal life. A clear limitation, however, exists in the terms of authorization. It must be *bonâ fide* for food that the harmless wild creature is deprived of life, not killed for the pleasure of killing; as people shoot seagulls by the shore, or pigeons in the disgusting matches at Hurlingham.

Lastly, we come to quite another problem. The man says, "I wish to vivisect an animal. Up to this hour we will suppose its life has been well cared for, and it has, on its part, served and loved mankind as its powers permitted. Now I wish to tie it down on a vivisecting table, and ascertain, by cutting it open, various interesting facts of science likely to be more or less useful by-and-by. Its death will not occur for several hours, and in the interval (if the truth be told), it will suffer excruciating agony. Nothing can comfort it, for it knows nothing of the hopes and faith which have sustained human martyrs on the rack. It will feel only that the men whom it loved as if they were gods, have turned to become its tormentors. Utterly helpless, bound, and gagged, and perhaps, paralysed with *curare*, it will lie for hours on its torture-trough till my mangling work on its flesh, bones, nerves and brain is fully and slowly accomplished; and then it may be suffered to expire."

What does the Arbiter say now? The lives of the animals in all the other cases we have supposed, are on the whole, a joy and blessing, and their deaths are not more painful (generally much less so) than the natural

deaths of old age or disease. But the vivisected creature's entire existence has been turned into a misfortune and a curse. The hours of its keen and excessive agony outweigh immeasurably all its poor little harmless joys of food and sunshine, and the love of its master and its offspring. It were well for that creature had it never been born. Does the Supreme Umpire then view such things and sanction them? Can we for a moment suppose Him to pass sentence justifying the vivisector? Nay, but it seems to me that a heavy condemnation must fall on such tyrannous misuse of human power and that the voice of every unbiased conscience must pronounce such vivisection a Moral Offence in the forum of ethics, and a heinous Sin before the judgment-seat of God.

This is one view of the case. In another way we may look at it, and note that one of two things must hold. Either Bishop Butler's axiom is false, and a creature, although sentient, has *no* right to be spared pain, and the whole brute creation has absolutely *no* claims at all upon man, who may act to them the part of a devil without offence; or else, Man is forbidden to inflict on any animal a torture *worse than death*. It is the very *minimum* to which we can reduce their claims that they must be exempted from the greatest evil which can befall them. Taking their *lives* is the last stretch of human rights. Making their lives such a curse as that they had better have perished at their birth, is a step far beyond killing them; and one which stands condemned on any principle which we can formulate, except the renunciation of all duty towards them. That vivisectors and their supporters do practically regard animals as having no rights as against man, and that they think *la loi du plus fort* all that is needed for the justification of their cruelties, is unhappily too evidently the real state of the case, albeit not a few of these tormentors are actually members of societies (and in one notorious case, a Vice-President of a Society) for the Prevention of Cruelty to animals!

You will observe that all these arguments concern the question only of *excessively painful* Vivisection. It is the infliction of torture which stands condemned by what we have said. That is the first thing. Now I shall tell you why we think that Vivisection, even when it does not inflict torture or severe pain, ought to be forbidden by law, and why the whole practice ought to be totally prohibited.

Assuming that we have proved that the infliction of torture is a moral offence, the corollary follows that, if Vivisection cannot be sanctioned without opening a door to that offence—if no line can be drawn between the experiments *per se* almost harmless and those involving gross cruelty—if no



protection can be given to an animal once it is laid on the vivisection table in a laboratory—and no guarantee can be obtained of a vivisectioner's mercy, then the whole practice ought to be stopped. If it be found impossible to separate the use of a thing from the abuse, and that abuse amount to a great moral offence, then it becomes needful to prohibit the use. The Scottish Antivivisection Society and three English societies stepped before the Victoria Street Society in demanding, from the outset, the *total* prohibition of vivisection, while it only asked for "the utmost possible protection to animals liable to vivisection." But I think we may all rejoice that the Victoria Street Society tried the more moderate demand in the first place; and that thus, without fear of being deemed hasty, or hot-headed, or *doctrinaire*, it has exhibited the spectacle of a band of men of high political and social importance, *des hommes sérieux*, in short, driven on by the logic of facts and the lessons of experience taught by infructuous legislation and delusive Returns, to quit their original standing ground, and raise their demands to the absolute suppression of a practice which cannot be curbed within the bounds of humanity. The speeches which have been made at our meetings show why men so little likely to be borne away by impulse, and differing so widely from each other politically and religiously as the late Lord Shaftesbury, the Cardinal Archbishop of Westminster, and the Lord Chief Justice of England, yet one and all came round to the same unhesitating conclusion: *that Vivisection ought to be totally abolished.*

The practical fact is, that Vivisection is a *Method* of research—a useful method, we must presume, in the opinion of those who employ it, though a misleading one in that of many men well competent to estimate its value. Now, a *method* cannot be partially pursued, employed to a certain extent, and then dropped or exchanged for another. It must be maintained *as a method*, or stopped *as a method*; and the labours of physiologists turned into the other and, as we think, more truly scientific channels of clinical and microscopic observation. There is no compromise really possible. The idea of the Royal Commission of the "reconciliation of the claims of Science and Humanity" was wholly delusive. Science ignores Humanity, and will be "reconciled" with no obstacle to her march.

And, after all, is not this just what might have been expected? How should it be otherwise? How should such a monstrous idea of our relations to the animals as lies at the root of Vivisection be reconcilable in any way with true feelings of sympathy and humanity?

Hitherto I have been discussing the question from the barest and coldest ground of pure ethics. But there are some animals to whom we men and

women stand in relations, which it is impossible to reduce to a hard moral question, even as it would be to discuss as a mere matter of right and wrong the cruel treatment of some dear little child. If I saw a little blue-eyed, fair-haired baby crowing in the sunshine, and holding up its little arms for my embrace, and then I were to see a wretch of a nurse come and deliberately knock its head on the stones, I should not, I think, require to appeal to ethical arguments to satisfy myself that the nurse was doing wrong; or to induce me to rush forward and save the baby, and pitch the nurse to Jericho—or further. In a similar way we who have made friends of our dogs, or horses, or cats, or even poor little guinea-pigs and rabbits and doves, when we think of them as kept for days in a vivisector's cellar, then brought out into the day-light of the laboratory, trembling and terrified; piteously, perchance, begging for mercy, but thrown on the torture-trough, tied down and gagged, only the speaking eye still pleading; then slowly carved alive, the nerves dissected out, and all the horrible apparatus of science brought to bear on the poor little quivering frame, which used to respond so lovingly to the caress of our hand,—when we think of this, I say, we do not need to go over all the moral reasons which prove that such deeds stand condemned by God's eternal law. We feel,—well, it is better not to say what I, for one, feel towards the smooth, cool man of science who stands by that torture-trough. Is it wrong to feel so? Nay; but I should be a heartless wretch if I failed to pity a creature who has loved me, and on whom I have bestowed affection, and resent the intolerable wrongs done to it on any pretence whatsoever.

If Vivisection is to be tolerated at all, if we are to regard the Dog (for example) as the three thousand doctors expressed in their Memorial to the Home Office in 1875, as “*a carnivorous creature, specially valuable for the purposes of research*” (*i.e.*, to be carved alive to satisfy scientific curiosity)—then we must, for very shame sake, and to prevent our children from becoming cynical hypocrites, stop at once talking of sympathy and love to animals. If we are going to give up the poor brute to be dissected alive, then, in Heaven's name, let us try to think of it as a mere automaton, a senseless bit of animated matter, which can have no feeling, no intelligence, no faithful affection. To admire its intelligence and fidelity, and lead our children to caress it and to note all its beautiful instincts, and *then* to deliver it to the tormentors, is something baser and more odious than the perfidy of an Eastern tyrant. It is only our utter ignoring of the claims of the brutes which prevents us from feeling sick with disgust at such cold-blooded hypocrisy. Let us fancy superior beings, angels, or God himself, treating *us* in like manner; accepting our humble services, drawing forth

our adoring love and fidelity, and then coldly consigning us to the torture chambers whence we shall never escape! Truly when we think of these things the awful words seem to sound in our ears: "With what measure ye mete, it shall be measured to you again."

I have, I hope, sufficiently explained the reasons why we ask for the total prohibition of vivisection, both on grounds of morality and also of natural, honest human feeling. As I said at starting, if we prove the practice to involve a great moral offence (perhaps I ought to say more exactly, is to be so inextricably connected with a great moral offence that it is practically impossible to sanction it and yet avert the offence), then the exhibition of the fortunate results which might be expected from the practice, is irrelevant. If we have no right to invade a defenceless country which lies at our mercy, it would be deemed cynically immoral to write leading articles and make parliamentary speeches, to show how much plunder we might obtain by ravishing it.

But our opponents, who are almost to a man Utilitarians, if not Agnostics, are by no means willing to settle the question on the grounds of simple deductive morals. For a large benefit to the human race, they will generally contend that almost anything is justifiable; and certainly such a small thing in their account as the torture of animals. In short, not a few of them talk grandiloquently of their *duty* to vivisect, in the "sacred cause of humanity;" and bid us stand by and admire their deep sympathy with human suffering, which makes them sacrifice all their own tender sentiments of compassion to animals in the hope of bringing some relief to the sick bed from the laboratory. Thus, then we are brought up short out of what, I suppose, they would call the high *priori* road of discussion, and challenged to say whether Vivisection, even if it be a wrong to the brutes, is not such a service to man as amply to justify its professors in disregarding the lesser obligation. As this line of appeal reaches many good and conscientious hearts, and has been fortified by Mr. Darwin's solemn denunciation of Antivivisectioners, as persons who would sacrifice the great interests of the human race to mistaken sentiment, I feel bound to confront it straightforwardly and carefully.

To begin with, it is incredible that we could sacrifice the interests of mankind by stopping the torture of animals. Those interests never can, and never will, while God reigns on high, be furthered by cruelty and wrong. We need never fear that we relinquish any real good for our race by following out the dictates of justice and mercy. It is an *impious* doctrine; I say it deliberately, an *impious* doctrine, that God has made it any man's duty to



commit the great sin of cruelty by way of obtaining a benefit for suffering humanity ; or the duty of the community to sanction such cruelty for its own benefits. After all, what are the boasted benefits to be obtained by Vivisection? I do not deny that a remedy for any of the diseases of our fleshly tabernacles would be a great benefit ; but, I say, that, even for that benefit the price of hardened hearts, and blunted sympathies, and intellects trained to the passionless registration of agony, would be too heavy a price. I do not believe in the cures said to be effected by help of Vivisection. When we sift any of these stories so often dinned in our ears, we usually find, either that the doctors have only discovered, like Pharaoh's magicians, how to *cause* the disease, but not how to *cure* it ; or if they have really found a cure or an improved mode of treatment, it has been by methods which—as Dr. Clay says of his most famous operation—“ have no more to do with Vivisection than the Pope of Rome.”—(*Brit. Med. Journal*, July 17, 1880).

But even *if* I be mistaken ; if Vivisectors have already made or do hereafter make discoveries, tending directly and importantly to relieve our bodily pains ; even *then*, I ask, would Vivisection, stand justified ? Not so, assuredly. Bodily health, relief from pain, prolongation of life, are not the only or the greatest good to be sought by man. The arguments which these doctors, and, alas ! several Bishops also, adopt, all rest on the crude, stupid, *heathenish* assumption that the moral interests of mankind are not worth considering, and the physical interests are all in all. The unexpressed major term of the whole argument of late Archbishop Magee then Bishop of Peterborough, as I heard him in the House of Lords, was : “ That a practice which, in the opinion of experts, conduces to the bodily health of one or more persons, becomes, *ipso facto*, morally lawful and right.” I leave you to reflect on the consequences of the adoption of this principle in the present state of medical opinion, and the sort of practices which would be lifted accordingly from the rank of Vices to Virtues.

Yet, if this major term be unsound, the whole argument of the lawfulness of Vivisection deduced from its supposed beneficent results falls entirely to the ground. The Inquisitors of old took really higher ground when they professed to burn a few heretics in the interests of the souls of mankind and to save men in not merely this life, but of the life hereafter from destruction.

I often think, however, that we are very credulous as regards these Vivisectors, when we listen to their pretensions to zeal for the benefit of humanity as justifying their disgusting pursuit. These English *augurs*, like those of ancient Rome, must smile, when they find one

another practising on the gullibility of the public. Foreign physiologists—like Claude Bernard, to whose statue our home-bred tormentors have liberally subscribed—do not think it worth their while to make pretensions to such a sublime and Prometheus-like Enthusiasm of Humanity. Dr. Hoggan told us they had no such hypocrisies, and that they laughed at such an idea in the great laboratory in Paris, where he witnessed most reckless cruelties; and Dr. Herman, of Zurich, frankly wrote in his famous pamphlet (*Die Vivisections-frage*), “the advancement of our knowledge and not practical utility to medicine is the true and straightforward object of all vivisection” (p. 16). I do not deny that there may have been here and there a vivisector who loathed his work (as any man with a heart in his bosom must loathe it), and yet occasionally performed painful experiments in the ardour of scientific research. Such a man, I believe, was Sir Charles Bell. But few and rare are the experiments such men would or have performed; and often,—like Haller, Dr. Syme and Dr. Reid—they would end by repenting all they had done, and denouncing the practice. But if you tell me that Claude Bernard baked his seventeen dogs in a stove, and Mantegazza larded his forty animals with nails, and Schiff tormented his fourteen thousand dogs, all with compunction and regret, and such pain to themselves as any one with natural unperverted feelings would experience, then, I say, simply, “I don’t believe it.” I consider the pretence that they did so as one more of the numerous shams, of which a certain “noble profession” will some day be ashamed. Vivisection either finds a man cruel and callous, or makes him so.

So much for the supposed *motive* of Vivisectors, which (I have heard it argued) may nullify the deadly moral consequence of a life spent in the work of torture. We Anti-Vivisectors are sad sceptics. It is true that we almost to a man believe in God, and in such a thing as Duty; but then, we somehow do not believe quite implicitly in physiologists! We think a man who will bake, and burn, and lard with nails, and dissect alive, harmless, and helpless creatures, is possibly capable of cloaking his cowardly and hateful proceedings under a mantle of philanthropy when he is talking to the mere Philistine lay-public. We think that a man who freely chooses for himself the life-work of a Familiar of this modern Inquisition, a sworn Tormentor of the new Question Chamber; a man who devotes his few years under the sun, in God’s bright world, to the task which the imagination of Dante has given to the Fiends in the pit of darkness—we think, I say, that the man’s soul suffers under more deadly disease than the palsies and cancers for which he vainly pretends to seek the cure.



For my own part, I say, and I think many of my readers will say with me, "Let me bear the burdens which God may lay on me, and die when to him seems good. But let me go out of this life of shadows into the eternal world, able to think that, like Theodore Parker, I may ask that over my grave should be read the words: 'BLESSED ARE THE MERCIFUL FOR THEY SHALL OBTAIN MERCY.'"

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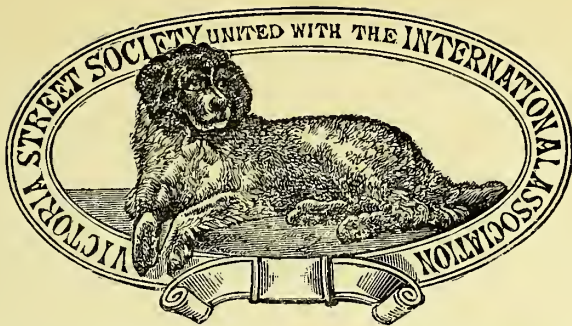
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FOR THE PROTECTION OF ANIMALS FROM VIVISECTION.

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THE  
LORD CHIEF JUSTICE  
OF ENGLAND  
ON  
VIVISECTION.

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FOR THE PROTECTION OF ANIMALS FROM VIVISECTION,  
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FOR THE TOTAL SUPPRESSION OF VIVISECTION.  
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## THE NINETEENTH CENTURY DEFENDERS OF VIVISECTION.

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IN the papers of Sir James Paget, Mr. Owen, and Dr. Wilks, on the subject of Vivisection, published in the *Nineteenth Century* for December, 1881, more than one reference is made to a Judge or Judges. No other Judge has spoken upon the subject, as far as I am aware; so that when a "Judge" or "law officer" is mentioned by three gentlemen amongst those opponents worthy at once of the contempt and anger which they express, or very imperfectly conceal, towards them, I cannot help applying some of the censure to myself. I wish I could; partly because so to apply it may look like vanity, as if in this regard I thought myself worthy of the notice of such great people; but much more because the statements as to anything I have ever said or written are so entirely inaccurate, that I must conclude (want of apprehension in such distinguished men being out of the question), either that they have not read what they profess to notice, or that they feel confident no one will read any reply.

I recognise, as much as any man can recognise it, the duty of a Judge being in court and out of it a man *egregii altique silenti*. But there are occasions on which it is a duty to speak, and I think this is one. Sir James Paget says that, "The only competent judges in such a case are those in whom sentiment and intellectual power are fairly balanced, and who will dispassionately study the facts and compare the pain-giving and the utility of experiments on animals with those of any generally allowed or encourage pursuit." Sir James Paget would deny, and I do not pretend to assert, that I am a "competent judge"; but I desire to state shortly and temperately, if I can, the reasons which lead me earnestly to support the Bill which Mr. Reid is about to submit to the House of Commons.

I should personally prefer in the abstract Regulation to Prohibition. I think it difficult to answer particular cases in which,

without any unfair manipulation of circumstances, it may be shown, that total prohibition might or would stand in the way of justice, or even of humanity. But a practical matter cannot be thus dealt with. In the affairs of men it is hardly possible to lay down a general rule which will not produce hard cases. Probably no law was ever abolished which had not in its time done some good, for which, in particular instances, some defence could not be made. Probably no new law was ever enacted to which some exception could not be justly taken, and which did not in particular instances do some harm. Objections, as Dr. Arnold once said, do not bring us to the point; and nothing would ever be done if we waited till we had satisfied every possible objection to the doing of what we propose. In all human action we have to choose and balance between opposing good and evil; and in any change of law to determine whether that which we propose, or that which exists, is *upon the whole* the best. On this principle I do not hesitate to support the absolute prohibition of what for shortness' sake, though with some verbal inaccuracy, I shall call, as others call it, vivisection.

The supporters of vivisection in this country are not themselves content with the present state of things. As far as I know the repulsive literature on the subject, no defender of the practice, except Sir James Paget (and perhaps I misunderstand even his last sentence), has said or implied that he is satisfied with the present law. The repeal of it is to be at once attempted; and it is contended that even those (to my mind reasonable) restraints which it imposes so injuriously hamper the practice of vivisection, that little or no good can result from it, if these restraints are continued. But it seems to follow that if the present law is admitted to be as bad for vivisection as total abolition, and if the present law is reasonable, they, at least, can have no strong motive for resisting an enactment in form of that which they say exists already in substance.

Is, then, the present law reasonable? It is the result of a most careful inquiry conducted by eminent men in 1875, men certainly neither weak sentimentalists nor ignorant and prejudiced humanitarians, men amongst whom are to be found Mr. Huxley and Mr. Erichsen, Mr. Hutton and Sir John Karslake. These men unanimously recommended legislation, and legislation, in some important respects, more stringent than Parliament thought fit to pass. They recommended it on a body of evidence at once interesting and terrible. Interesting indeed it is from the frank apathy to the sufferings of animals, however awful, avowed by some of the witnesses; for the noble humanity of



some few ; for the curious ingenuity with which others avoided the direct and verbal approval of horrible cruelties which yet they refused to condemn ; and in some cases for the stern judgment passed upon men and practices, apparently now, after the lapse of six years, considered worthy of more lenient language. Terrible the evidence is for the details of torture, of mutilation, of life slowly destroyed in torment, or skilfully preserved for the infliction of the same or diversified agonies, for days, for weeks, for months, in some cases for more than a year. I want not to be, if I can help it, what Mr. Simon calls a "mere screamer" ; nay, if possible, to avoid that yet more fatal imputation upon an Englishman which Dr. Wilks brings against his opponents, that we "lack a sense of the ludicrous." I wish to use quiet language, but I must, nevertheless, at all hazards own that, sharing probably the lower and less sensitive organisations of the monkey, the cat, and the dog, I fail altogether to see the joke which he sees, in any attempt to stay these tortures ; and further that to read of them, not in the language of "paid scribes and hired agitators," but in the language of these humane and tender men who first inflict them and then describe them, makes me sick. True that the most exquisite and most prolonged tortures appear to have been inflicted out of England ; true that, both before the Commission and since the Report, the broadest avowals of entire indifference to animal agony have come from foreign countries, or from foreigners in this. But our inferiority in this respect, the as yet unreasonable dislike of our medical classes to witnessing very painful experiments, are made the subject of earnest and repeated regret. It is hoped that we may be brought up to the foreign standard ; that our insular prejudice may be purged away by degrees, and that in time we may feel the beauty and enter into the nobility of M. de Cyon's description of "the true vivisector." "He," says M. de Cyon, "must approach a difficult vivisection with the same joyful excitement, with the same delight, as the surgeon when he approaches a difficult operation from which he anticipates extraordinary consequences. He who shrinks from the section of a living animal, he who approaches a vivisection as an unpleasant necessity, may perhaps be able to repeat one or two particular vivisections. but will never become an artist in vivisection." *Principiis obsta.* I do not desire this result for my fellow-islanders. I think both that the Report of the Commission was at the time and has been since abundantly justified, and that the legislation founded on it did not go beyond very reasonable limits.

But that there exists a statute confining vivisection within reasonable limits, with which some people are dissatisfied, is not, it may be said, any ground for going beyond those limits, and prohibiting the practice altogether. By itself it is not. But the claims of the vivisectors have meanwhile become so large, the tone they take is so peremptory, the principles on which they base themselves are so alarming and (I think) so immoral, that I have become reluctantly convinced it is only by the strongest law, by absolutely forbidding the practice itself, that the grave mischief which follows from holding parley with these claims can be stayed or destroyed. Before the Commission, except by a witness or two of exceptional frankness or indiscretion, an apologetic tone was adopted, the duty of avoiding pain if possible was unreservedly, at least in words, admitted, of at least minimising suffering, of never inflicting it except in pursuit of some reasonably probable discovery, of not torturing animals simply to show manual skill, or to illustrate acknowledged and ascertained truths. All this sort of thing has somehow disappeared. I am not conscious of any distorting influence on my judgment; I have no anti-scientific bias; I read as far as I can a good deal on both sides with a desire, I think sincere, to arrive at a sound conclusion, and I deliberately say that it seems to me no man can read the Blue Book of 1875, and these papers of Sir James Paget, Mr. Owen, and Dr. Wilks of 1881, without being conscious that, somehow or other, the whole atmosphere has changed. For example, Magendie and his experiments are denounced before the Commission in language such as Robert Southey might have used, and did use respecting them. Dr. Wilks's "world-famous Darwin" applies to experiments such as his what the Commission rightly call the "emphatic terms" "*detestation and abhorrence.*" Now in 1881 Sir James Paget speaks of them without a syllable of disapprobation, nay, I must say, it seems to me, in a tone of absolute apology. What more cogent can be said? If here or elsewhere I seem to use language of blame or disrespect towards such a man as he is, a man whom in common with all the world I respect and admire with all my heart, it is only because in a grave matter I cannot help, after much reflection, being convinced that he is wrong. I admit the weight of his character; I recognise the moral force he brings to any side which he supports; and if I find that such a man as he cannot advocate his cause without what seems unfair reasoning, and an apparent disregard of or apology for hateful cruelty, it is the strongest possible argument to my mind that the cause itself should be done away with; for



if even Sir James Paget cannot escape its evil influences, what will they not effect on the common run of men who have neither his head nor his heart to keep them right? I say then, that the complete change of tone in the vivisectioners, the open scoffing at laws of mercy which not so long ago were honoured, at least in words, the broad claim that in pursuit of knowledge any cruelty may be inflicted on animals; these things not only startle me and shock my moral sense, but they convince me that a practice which, according to the contention of its best and ablest advocates, involves these claims, is one which it is no longer safe to tolerate.

I do not say that vivisection is useless, and I am sure I never have said so. I do not know enough of the history of science to venture on any such statement. Dr. Wilks indeed asserts that he has looked in vain "for any speech delivered" (*inter alios*) "by a judge who has not made inutility the staple of his argument;" but he is absolutely inaccurate, and I contradict him as flatly as is consistent with courtesy. I should think it as foolish and presumptuous in me to say so, as it is presumptuous (I had almost said foolish) in the gentleman whom Dr. Wilks calls "the venerable Owen," to say of "one of our highest law officers" (meaning, I imagine, me) "that he *purposely*" (the word is the venerable gentleman's) "obstructs the best mode of admitting the light which the law looks for in cases of suspected poisoning." Mr. Owen is an old man, but I am no longer young; and I take leave to say that no age is venerable if a man has not learned to abstain from unmannerly imputations of motive, and from indulgence in mere scolding and abuse of opponents of whom (I do not speak of myself) he can know nothing but what is to their credit, and who at least at no time of their lives have ever been accused of endeavouring to crush a scientific adversary by means at once ungenerous and unfair. *Testa servat odorem*; but this is by the way. What I have said and do say is that very considerable men are not agreed as to the great utility of vivisection, or as to the value of the results which have followed from it. There are two sides to the question; which is the right one I do not pretend to say; but there are men of name, and statements which at least look authentic, upon both. There are certain stock cases, some of them very old, which reappear on every discussion; I have heard so often and so much of Mr. Spencer Wells's rabbits, that I will own to a suspicion that if the baked dogs, and mutilated cats, and gouged frogs, and nail-larded guinea-pigs, and brain-extracted monkeys, had resulted in anything worth hearing of, I should have heard of that too. But I do not say, and have never said, that vivisection is useless.

I must, however, be permitted to say how loose and vague are the notions of evidence which, as far as I know them, pervade the writings of men of science on this question. Sir James Paget once in my hearing, in the course of a very striking speech, not only with perfect candour admitted, but insisted on this defect. He said (and I think truly said) that men of science often (not, of course, always) arrive at conclusions on evidence which a lawyer would hardly admit to be evidence at all in a question of disputed fact. No fair man I think can fail to be struck with the uncertainty, a different point from inutility, of the conclusions to which vivisection has conducted those who practise it. The conclusions are doubted, are disputed, are contradicted by the vivisectioners themselves. So that it really is not experiment to verify or disprove theory, which one well-conducted and crucial experiment might do, but experiment *in vacuo*, experiment on the chance, experiment in pursuit of nothing in particular, but of anything which may turn up in the course of a hundred thousand vivisections, and during the course of a life devoted to them. This is the experiment for which liberty is claimed, and the unfettered pursuit of which we are called very hard names for objecting to. "Pseudo humanitarians," "ill-informed fanatics," "true pharisaical spirit," these are but specimens of the language—which the calm and serene men of science find it convenient to apply to their opponents. We may be wrong; but at least let our position be distinctly understood, and let the mode in which we are opposed be distinctly appreciated.

I deny altogether that it concludes the question to admit that vivisection enlarges knowledge. I do not doubt it does; but I deny that the pursuit of knowledge is in itself always lawful; still more do I deny that the gaining knowledge justifies all means of gaining it. To begin with, proportion is forgotten. Suppose it capable of proof that by putting to death with hideous torment 3,000 horses you could find out the real nature of some feverish symptom, I should say without the least hesitation that it would be unlawful to torture the 3,000 horses. There is no proportion between the end and the means. Next, the moment you touch *man*, it is admitted that the formula breaks down; no one doubts that to cut up a hundred men and women would enlarge the bounds of knowledge as to the human frame more speedily and far more widely than to torture a thousand dogs or ten thousand cats. It is obvious; but it was admitted over and over again that experiments on animals were suggestive only, not conclusive, as to the human subject. Especially is this the



case with poisons ; some of the deadliest of which do not appreciably affect some animals, and as to all of which it is admitted that it is not safe to argue from their effects on animals to their effects on man. As to man himself, it was not so long ago that medical men met with a passion of disavowal, what they regarded as an imputation, viz., the suggestion that experiments were tried on patients in hospitals. I assume the disavowal to be true ; but why, if all pursuit of knowledge is lawful, should the imputation be resented? The moment you come to distinguish between animals and man, you consent to limit the pursuit of knowledge by considerations not scientific but moral ; and it is bad logic and a mere *petitio principii* to assume (which is the very point at issue) that these considerations avail for man but do not for animals. I hope that morals may always be too much for logic ; it is permissible to express a fear that some day logic may be too much for morals.

An interesting illustration of this remark has just been given. Mr. Jonathan Hutchinson, the senior surgeon to the London Hospital, has recently been reported in the *British Medical Journal* as avowing to his pupils that in fact a patient "in a miserable condition" had (1) not been cured, by a Dr. Tom Robinson, who had him under treatment and might easily have cured him, in order that the students at the hospital might be witnesses of the case ; and (2) had been kept in the hospital "for a few days before using the magician's wand, in order that all might see that there was no natural tendency to amelioration." If this had been correct, it would certainly have been a curious and convincing proof of the reasonableness of the fear I have expressed that logic might now and then prove too much for morals ; for if this is not experimenting upon a human subject, and putting him to needless suffering, in order to demonstrate an already known fact, I do not know what is. But Mr. Hutchinson says he has been, like Dr. Klein, misunderstood and misreported. There is no more to be said ; but if it is to be hoped that the practices of scientific men may not be so far misconstrued by their pupils who see them, it seems their language is misunderstood by those who hear it and report it.

It comes to this, that the *necessity* for vivisection, in order to attain the ends proposed, is not admitted by many persons of knowledge and authority ; that its *practical* utility in alleviating human suffering, though not denied, is on the same authority said to be much exaggerated by those who practice or defend it ; that even if it be admitted to be a means of gaining scientific knowledge, such knowledge is unlawful knowledge if it is pur-



sued by means which are immoral; and that a disregard of all proportion between means and ends often makes both alike unlawful and indefensible. Meanwhile, if we turn to the other side, the positive evil engendered by the practice appears to me to be frightful. I do not speak only of the sufferings of the tortured brutes; to dwell on these might be called "screaming," and I have said that the amount and intensity of these, as described by the vivisectors themselves, is absolutely sickening. In this world of pain and sorrow surely the highest of God's creatures should not wilfully increase a sum which seems too great already. I seem to hear those voices and that wail which the verse of Virgil, at once tender and majestic, has ascribed to infants, but which may come also from creatures hardly inferior to infants in intelligence, and not at all inferior to them in their capacity to suffer:—

"Continuò auditæ voces, vagitus et ingens,  
Infantumque animæ flentes in limine primo,  
Quos dulcis vitæ exsortes, et ab ubere raptos,  
Abstulit atra dies et funere mersit acerbo."

Far worse I think in result are the practice and the principles on which it is defended upon the defenders and advocates of both. I should have expected this *à priori*. Where the infliction of pain is the special object of the experiment, where the power to endure it is the thing to be measured; nay, where the sensitiveness to pain and the liability to mortal or non-mortal injury of this or that organ, or set of organs, or nerves, or muscles, is the matter of investigation, I should expect to find that a man who was an habitual vivisector, "an artist in vivisection," as M. de Cyon calls him, was one by nature callous to the sufferings of animals, or who in the course of these experiments had become so. Surely experience shows the justice of the expectation. Who, not a vivisector, can read without a shudder these papers in the *Nineteenth Century*, and Mr. Simon's address to the Medical Congress in 1881, a shudder at the utter and absolute indifference displayed to the terrible and widespread suffering which the practice the writers are defending entails upon helpless and harmless creatures? Yet who are these writers? Chosen men; bright examples (we are told) of the scientific class, persons whose names alone are to be arguments in their favour. If these men write thus, and it is incredible that merely as men of common sense they should affect an indifference they do not feel what will be the temper of mind of the ordinary coarse, rough man, the common human being, neither better nor worse than

his neighbours, of whom the bulk of the medical profession, like the bulk of every other profession, is made up? What is the effect of the familiarity with cruelty in other cases? What was it in the Slave States? What was it in the days of slavery and gladiators in Rome? What was it in England a hundred years ago? What is it now in places and amongst persons where and amongst whom cruelty and brutality is not the exception but the rule? Natural laws are not suspended in the case of vivisectors; and I will mention an instance within my own experience which I am sure cannot offend, because I am certain the person cannot be known. Some time since I met in society a very eminent man, a man of very high character, and for whom, in common with most men, I have a very great respect. He is certainly not an habitual vivisector, but I believe he has occasionally vivisected. I left his company shocked and disturbed to a degree difficult to express, not from any particular thing he said, or any particular experiment he described, for he said little on the subject, and I think described nothing; but from the assumption that underlay his conversation, that we had no duties to the lower creatures when science was in question, and that the animal world was to a man of science like clay to the potter or marble to the sculptor, to be crushed or carved at his will with no more reference to pain in animals than if they were clay or marble. Yet this was a most gifted man, a man but for the taint of vivisection every way admirable, but a man whom that taint had made (I feel sure in his case, owing to the blessed inconsistency of humanity, to the animal world only) cruel and heartless.

This is a question not to be decided by an array of names. I know that great men are not all on one side about it. But we have great men, and those surely not weak or effeminate, on ours. In the single volume written by Sir Arthur Helps, entitled *Animals and their Masters*, there will be found a collection of authorities on this point, as well as others cognate to it, which may well bring to a pause these gentlemen, venerable and otherwise, who are so smart upon us with their sneers and sarcasms. I will not quote Montaigne, though a man less sentimental never lived; for he is old, and may be said to write only in the general. But what is to be said of Jeremy Bentham? "The question is," says he, "not, can they reason, or can they speak, but can they suffer?" What of Voltaire, who has passage after passage of trenchant scorn for the vivisectors of the faithful dog? What of Sir Arthur Helps himself, who "has a perfect horror of vivisection; the very word makes his flesh creep"? But why



multiply examples? It is not true that fools and women and children are on one side, and wise men on the other. It is not true that we are Pharisees, or fanatics and shams. We know what we are about, and we think that Parliament will be moved, if it is moved at all, not by calling names, but by facts and arguments.

Now what besides this somewhat ostentatious contempt is the argument of these gentlemen? So far as it depends upon their frequent assertions of the practical value of vivisection, I have said already that I will not dispute with them as to the fact. A lawyer ought at any rate to know the folly of encountering an expert without the knowledge necessary for success in the conflict. I deny the practical conclusion sought to be drawn from it upon grounds of another sort which appear to me to be of overwhelming force, but which I will not repeat. There is, then, another line of argument which I am positively mortified to have to notice; it seems to me alike unworthy of the subject and of the men who use it. In substance it is this: it is hypocrisy, it is inconsistency, it is folly to attack vivisection, which, if it be cruel, is not more cruel than some, is not so cruel as many, sports or practices which all men follow, which you yourselves, the anti-vivisectionists, either do not dare attack, or do not condemn. Then there is the inevitable Hudibras about "sins we have no mind to"; the equally inevitable Sydney Smith (distorted as inevitably from the context which made it sense), that all prohibitory acts contain principles of persecution; and so, because nature is cruel, because men are cruel, because there are hypocrites in the world, because the principle of prohibition may in some cases contain the principle of persecution—what then? Why something which, *consistently with all this argument*, may be horribly cruel and utterly useless is to be let alone. As argument, nothing can be feebler; but are these statements fair? I think certainly not. It is true that there is much cruelty in the world as to which some men are careless, but a great many more are ignorant, and which, if they knew more or thought more, they would not permit. I do not believe that the gentle ladies and refined gentlemen who subject their horses to cruel pain, day by day or year by year, by means of gag-bits and bearing-reins, have ever seriously thought, or perhaps really know, what they are doing. They have not read Sir Francis Head, or Sir Arthur Helps, or Mr. Flower; they have not thought about it; they are in bondage to their coachmen. A man, a woman, who deliberately tortures a noble animal as we see hundreds, perhaps thousands, carelessly and ignorantly tor-



tured day by day in London, is, I freely admit, open to the taunts of Mr. Owen and Dr. Wilks.

So again I should suppose that the vast majority of persons who have white veal brought into their houses have never seen, as I have seen, a calf still living hung up in a butcher's shop. If they had, and if they knew the process by which veal is made white, I think better of my countrymen than to believe that they would bear to see it at their tables. Most men do not reflect; nay, most men do not know these things. If they do, and the knowledge makes no difference in their practice, I leave them to the tender mercies of the gentlemen of the *Nineteenth Century*.

As to the mutilation of horses and bulls, I do not know how they manage in other countries, but I am quite sure that in this it is, if these animals are to be kept in numbers at all, a matter of sheer necessity. If cruelty which can be prevented is used, it is wrong; and I at least do not defend it. Nor am I prepared to say there is not much in our ordinary habits towards these and other animals which needs amending. But I think that Mr. Owen must be hard driven indeed if he can sincerely speak of mutilations "to enhance the charms of vocal music especially of the sacred kind," as things which his adversaries are interested, or are in consequence bound to defend. I never heard of such a practice obtaining at any time in this country; and I imagine that his venerable age has led him for the moment to forget how long it is since it was tolerated even in the dominions of the Pope. Surely a man must be at his wits' end before he could gravely put forward such an argument as this in defence of a claim to vivisection by wholesale. If he is joking, I am sorry to say the humour has escaped me.

But sport? Well I am not ashamed to say that there are some sports which appear to me so cruel and so unmanly that I wonder very much how any one can find pleasure in them. Although in youth devoted to some kinds of manly exercise which inflicted pain only on myself, and not quite unskilled in them, I own that at no time has the slaughter of pigeons out of cages, or of half-tame pheasants driven in thousands by beaters across the muzzles of guns, or some other forms of fashionable amusement in which the whole point is the wholesale destruction of terrified and unresisting creatures, ever appeared to me to be very distinguishable from duck-hunting, or cat-baiting, or the slaughter of cocks and hens in a poultry yard. A fox, an otter, a stag (a wild one), die game; there is skill, there is courage, sometimes there is even danger at the end or in the course of the hunt which explain the enthusiasm of those devoted to it; and which

make even one not devoted to it doubt whether Dr. Johnson was quite as wise as usual in saying "that it was only the paucity of human pleasures which persuaded us ever to call hunting one of them." But a hare! Certainly if to hunt down with hounds and horses one poor timid trembling creature be manly, I am content on this matter to be unmanly all my life.

I do not defend everything that is done in sport. One I knew, a brave and high-spirited man, a keen and successful sportsman, gave it up in the prime of life because he could not face the cruelty. Another, almost the manliest man I ever came across, one of the best shots and finest riders in England, with whom I had many talks on these matters, did not give it up, for it had become a second nature to him, but laid down and enforced a set of rules for his shooting parties which, as he said, at least "reduced pain to a minimum." These men may have been exceptions, but, depend on it, they were not alone. Yet I do not doubt that there is pain in sport; I do not question there is cruelty; if ever the general sentiment of mankind awakes to it I believe that either the cruelty will be indefinitely lessened, as it might be, or the sport itself put down, as bull-baiting has been in England, and tried in vain in France, in spite of the patronage of an Empress. I should think, however, that Sir James Paget greatly overstates the pains of animals like the otters, which die fighting in hot blood. Moreover, at the worst as a rule they die quickly, and they and their pains end together. The slow torture, the exquisite agony, the suffering inflicted with scientific accuracy up to the point at which the frame can bear it without death, these things are unknown to sport. At least and at lowest sportsmen do not intend them.

These are the deductions which I think a fair man would make from Sir James Paget's or Mr. Owen's facts. But grant them all and what do they come to as an argument? I have already peremptorily denied that we defend or are indifferent to cruelty anywhere; and are we not to try to prevent one sort of cruelty which we can reach because there is much that we cannot? One can hardly suppose these gentlemen are in earnest. We are not to forbid larceny because there are many forms of dishonesty which the law cannot restrain; nor injury to life or limb from bodily violence because existence can be made miserable and life shortened by taunting, by temper, by a thousand means known to ingenious malignity and familiar to us all, which yet evade the law; not to punish rape because seduction, which may be more wicked, is dispunishable; not certain frauds and cheats, because a multitude of



other frauds and cheats escape us. I waste time over such argument. Of two things, one—vivisection is right, and then there is an end of the matter; or it is wrong. If it is wrong and can be prevented, it is none the less wrong, and ought none the less to be prevented, because other things are also wrong, but cannot be prevented, or cannot be prevented now. One thing at a time.

There is a sort of argument or mode of influence employed persistently on this question on which it is fit that I should say a word. The writers with whom I have been dealing, not content with the contumely they pour upon our "mature ignorance," "crude sentiments," and "pretences," are never tired of celebrating the moral and intellectual virtues of the men who agree with them. One man is "venerable," another "world-famous," two more "most illustrious," and so forth. "The air broke into a mist with bells," says Mr. Browning; and it is well if the walls of our city do not tumble down and our own senses forsake us, with the blare of the trumpets which announce the arrival of each foe upon the field. But, besides being surely a trifle weak, this trumpeting is nothing to the purpose. Why should a venerable osteologist, a world-famed naturalist, or a couple of most illustrious physicians, be any better judges than a man of average intellect, average education, and average fairness, when the question is what is the limit (it being I think certain that there *is* one) between lawful and unlawful knowledge, and lawful and unlawful means of gaining it; and what is the moral effect necessarily or probably, according to the common facts of human nature, of a certain course of practice? When the Factory Acts and the Mining Acts were passed, Parliament did not question the doctrines of the venerable Adam Smith, or the world-famous Mill, or the most illustrious Ricardo, but it decided that, notwithstanding their doctrines, certain morally mischievous things, which could be prevented, should be.

I own I am not much moved by this appeal to authority. I remember the time when it was difficult even among cultivated men to get a hearing for the North, in the American civil war; and when the sympathies of society went with slavery. As far as I know the Church of England never raised a finger, and very few of its bishops ever raised a voice, to put down our own slave trade, or set free our own slaves. Sir Arthur Helps tells us, in the book already mentioned, that he never heard a single sermon, out of many hundreds he had attended, in which the duty of kindness to dumb animals had ever been alluded to. Yet amongst these preachers, or amongst the maintainers of slavery and the



slave trade, were to be found, I doubt not, many who were venerable, some illustrious, a few world-famous.

Further, I have heard that the great Roman Communion holds that we have no duties to the animal creation; that it has been given to us in absolute subjection; that it is a Pagan view to hold otherwise; and that some clergymen sometimes deliberately bully animals before their pupils to show their despotic authority over them. I do not assert this; the name and known opinions of Cardinal Manning seem to show that at least it has never been so decided; but I have heard it on respectable evidence. If it be so, we must, with due responsibility, think and act for ourselves without authority, or, if need be, against it. But there is one authority, conclusive, no doubt, only to those who admit it, conclusive only to those who believe that they can read it, to which in conclusion I dare appeal. When a bishop in the Southern States had been defending slavery, he was asked what he thought our Lord would have said, what looks He who turned and looked upon St. Peter would have cast upon a slave-mart in New Orleans, where husband was torn from wife, child from parent, and beautiful girls, with scarce a tinge of colour in them, were sold into prostitution. The answer of the bishop is not known, but I will venture on a kindred question. What would our Lord have said, what looks would He have bent, upon a chamber filled with "the unoffending creatures which he loves," dying under torture deliberately and intentionally inflicted, or kept alive to endure further torment, in pursuit of knowledge? Men must answer this question according to their consciences; and for any man to make himself in such a matter a rule for any other would be, I know, unspeakable presumption. But to anyone who recognises the authority of our Lord, and who persuades himself that he sees which way that authority inclines, the mind of Christ must be the guide of life. "Shouldest thou not have had compassion upon these, even as I had pity on thee?" So he seems to me to say, and I shall act accordingly.

COLERIDGE.

# Do the Interests of Mankind Require Experiments on Living Animals?

IF SO,

Up to What Point Are They Justifiable?

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*Paper read at the Church Congress at Folkestone,  
October 6th, 1892.*

BY

ALFRED BARRY, D.D., D.C.L.,

CANON OF WINDSOR, LATE PRIMATE OF AUSTRALIA.

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1895.

### PREFATORY NOTE.

I have thought it right to allow this paper to be reprinted, as it was originally delivered, except in the place indicated by the note on page 7—only omitting two or three expressions, which were (as I think erroneously) supposed to imply personal reflections.

Nothing which has since happened leads me to modify the general argument of the paper. The controversy was shifted by Professor Horsley and others to a side issue—the question of the inaccuracy of some passage in the *Nine Circles*, mainly in the omission of statements by the operators that anæsthetics were administered. While I greatly regret that such inaccuracy should have been by inadvertence admitted, it is clear that, in view of the facts acknowledged on all sides, it fails to touch the merits of the main question at issue, and in consequence to affect the argument of my paper.



DO THE INTERESTS OF MANKIND REQUIRE  
EXPERIMENTS ON LIVING ANIMALS? IF  
SO, UP TO WHAT POINT ARE THEY  
JUSTIFIABLE?

*Paper read at the Church Congress, at Folkestone, 1892, by*

ALFRED BARRY, D.D., D.C.L.,

Canon of Windsor, late Primate of Australia.

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I AM profoundly thankful that (boldly and wisely, as I venture to think) it has been determined that this subject, which involves the great question of our rights and responsibilities towards the animal creation, shall be discussed at a Church Congress. For the very function of our Congress, which it has for many years discharged with splendid success, is, not to frame Church policy or pronounce with Church authority, but simply to form public opinion, and to mould it by the spiritual force of Christian idea. I assert unhesitatingly that this subject is one on which, in the discharge of that function, it has a right and a duty to dwell. For certainly it is a burning question which cannot be ignored; it is one on which public opinion greatly needs both information and guidance, and with which an enlightened and earnest public opinion—using law, but going beyond law—alone can adequately deal. It is a subject, moreover, on which a Church Congress is doubly qualified to pronounce. Even from a scientific point of view, I protest against the dictatorial prohibitions uttered by some self-constituted, and mostly anonymous, representatives of Science. There is a value, and a great value, in that educated lay opinion, which in our department of study we theologians are constantly bidden to regard; as correcting the narrowness of view to which all experts are liable, and judging, with broad common-sense and common feeling, both of principles and of results. But from the point of view on which I would mainly insist

—the moral and religious point of view—I claim that in this Congress we have the right of experts. For the Church, and those who are engaged in her service, miss the very reason of her existence, if they do not study and apply to every phase of human life the great principles of religion and morality. Looking at the subject in this light, I gladly see that the cause, to which I am conscientiously opposed, is to be pleaded by men of high ability and distinction.\* Their presence here indicates that they, at least, do not hold that the Congress is presumptuous in dealing with the question. It must secure also, what I, for one, greatly desire—that the whole truth of the matter shall be brought out, and left to prevail, as it will prevail, by its own intrinsic power.

I. For the form in which the subject is presented to the Congress I am not responsible. I should have preferred to dwell explicitly not on the interests, but on the duty of mankind—and on this, as considered in its fullest generality—to the animals, as God's creatures committed to our charge. Duty and interest may in their results coincide; but I desire first to seek duty, and trust in the coincidence of interest, rather than first to consider interest, and from this deduce the course of duty. But yet I see some advantage in that form, because it brings out on this subject two points of vital importance.

The first is this—that in pleading against such experiments as inflict scientific torture on the animal creation, we are pleading not only for them, but for the true “interests of mankind.” The controversy, indeed, is but one part of a far larger conflict between the material and the spiritual—the devotion to the lower humanity of the body and to the higher humanity of the soul. Vivisection under this aspect can at most claim—how far justly I do not now inquire—to serve the purely material interests by its supposed discoveries; and it is painfully instructive to notice, that some criticisms on this subject from a medical point of view have shown an utter unconsciousness, that there can be any other interests than these, which are worth a moment's consideration. We, on the other hand, do not disregard these, but it is not for these that we chiefly care. We believe that the hardening effect of deliberate disregard of helpless suffering tends to destroy—primarily, in the inflictors of torture, secondarily, in the witnesses

\* In writing thus, I had hoped for the presence of Sir Andrew Clark; and did not, of course, anticipate the tone of Professor Horsley's paper.

and supporters of its infliction—the higher spiritual humanity. For it has to resist deliberately the instinct of compassion and beneficence, to which by significant use, we commonly give the very name of “humanity”—the very principle which, in man, resists and conquers the cruel and selfish struggle for existence. If (which God forbid !) it should tell for evil on the noble profession of medicine as a whole, it must tend towards the only vivisection which seems to me scientifically unimpeachable as to the certainty of its results—the vivisection of living men—not, indeed, as in the days of the Renaissance, by the literal torture to death of unhappy criminals, but by experiments for the sake of scientific interests, or even scientific curiosity, on innocent patients who come to seek healing or relief. Now we do not, indeed, believe that the two classes of interests are really opposed to each other. But if they were, even for the sake of humanity itself we should say, “Sacrifice unhesitatingly the lower to the higher; suffer pain rather than selfishly inflict it. What shall it profit a man to gain a whole world of material advantage, and lose his own true life?”

The second point is the unequivocal recognition by this form of the question that the *onus probandi* in its moral aspect rests on those who advocate, not on those who oppose, vivisection. These experiments on living animals have to justify themselves, and to show what the point is up to which they are thus justifiable. Till they do this decisively—till they show substantial reasons why we should set aside the instinctive reluctance of true humanity to the infliction of torture upon the helpless—we who oppose it have to maintain a ground absolutely impregnable.

II. Let us see what the vivisection is which has to be justified.

No one (I suppose) doubts that man has a right, as a part of his lordship over creation, to use animal service, even to take animal life. But our Law against cruelty to animals expressly denies that this right extends to the infliction on the creatures we use, even on the creatures that we kill, of serious and excessive pain. It punishes it summarily—refusing all pleas of expediency, of ignorance, even of necessity—as cruelty. Now, when some fifteen years ago it was shown conclusively before a Royal Commission, including some of our leading medical men and scientists, that there was urgent need of restraining by law all cruelty in the practice of vivisection, what



was the original idea of the Bill, as proposed by Lord Carnarvon ? It was to act in the spirit of the existing law—to insist on what was then thought to be possible, that by use of anæsthetics, both during actual operation and afterwards up to the time of death, substantial painlessness should be secured. Had that provision remained intact, and had it been found possible to carry it out and enforce it, no one could have raised for a moment any reasonable objection. Up to that point we should all allow that experiments on living animals, if really needed, were justifiable. But in a Memorial to the Government, signed by 3,000 medical men, it was urged that by compulsory use of anæsthetics most important researches would be checked ; and it has been proved that in various forms of experiment it would defeat the whole object of the experimenter. In unhappy deference to this Memorial, the Act, as finally passed, contained a section giving power, on recommendation from scientific authority, to grant certificates dispensing with all anæsthetics whatever, and all limitation of the time of suffering, and delivering over the helpless animals, without the slightest protection, to the infliction at the will of the operator of any intensity and any lingering duration of pain. Now of these certificates a constantly increasing number is granted year after year, and the last returns of the inspector show that, even so far as his imperfect knowledge went, derived from rare visits of inspection and untested returns made by the operators, nearly 1,400 experiments of this kind were performed in 1891 in England and Scotland.\* Even on the experiments supposed to be performed under anæsthetics we look with grave suspicion. All experts know how singularly difficult it is to secure and continue real insensibility ; and we observe the frequent use of the drug, which Tennyson has called “ the hellish urari,” reducing the victim to an absolutely motionless helplessness, which gives full scope and safety to the operator, while its sensibility is even quickened to suffer what a leading French vivisectionist has called “ atrocious tortures.” But under the certificates, of which I speak, no pretence of removing or alleviating suffering is made. Pain, often severe pain, is deliberately inflicted ; the heart has to be hardened against suffering,

\* The number has increased in 1894 to 2,183. Many of these appear to have been trivial. But there is no limitation in this respect by law, and no consistent vivisector would bind himself to avoid all severe pain if he thought it necessary for his experiment.

and even in the case of the dog, man's faithful friend, against mute and touching appeals for mercy.

For under these licences, what is actually known to be done, and that in England? Do not be deluded by the belief that in our own country vivisection is so regulated, that no serious torture can be inflicted. Abroad, as we well know, vivisection is unrestricted—certainly by law, apparently by public opinion; and there no one doubts that hideous cruelties are inflicted, often without even a shadow of reluctance, sometimes with a wantonness of infliction, both of physical, and what I must call mental, suffering. In England, I thank God that there is restriction of law; and yet I must remind you that this restriction, valuable as it is, yet involves a licence by authority, which makes the community itself more directly responsible. By such restriction, and, as I trust, also by force of English opinion and feeling, there is, as yet, here nothing equal in extent to what is perpetrated abroad. But still, in our own country, often in pursuance of test of these foreign experiments—for the unrestricted freedom of which some of our medical authorities sigh—numerous experiments are performed without anæsthetics, into the details of which I will not go, but which certainly must in many cases inflict severe and lingering pain.\*

Of the truth of these facts, there can be no question. Yet I can imagine, in those who have not studied the subject, an almost invincible incredulity. Would you have us believe (they say) that these scientific investigators are simply fiends, delighting in torture for its own sake? Do you suppose that the medical profession—a noble profession, which has always been distinguished for its beneficence, and of which but a comparative handful of men are vivisectors—would in the same spirit of heartless cruelty support them? My answer is emphatically—No. But all history shows that the most ruthless cruelties have been inflicted, not in mere selfish wantonness, but by those who believed that they were serving some great cause. It is on them that there comes the temptation “to do evil that good may come,” the belief that “the end justifies the means.” So it was in the persecution of the Holy Inquisition in days gone by,

\* I have here modified the words of my original paper—omitting some detailed references to experiments, because they depended on the authority of statements of fact, several of which were proved to be inaccurate.

which have passed into a proverb of exquisite cruelty, and which yet were calmly inflicted by those who thought that they were doing God service. So it is in the enthusiasm for science in the present day. Intellect, unrestrained by conscience and heart, is an infinitely cruel thing. By it men, otherwise not unfeeling men, are led to steel their hearts against natural compassion, till they disregard (as Dr. Klein admitted) all animal suffering, or even go to the work (so M. Claude Bernard has it) with a positive artistic pleasure.

III. What are the pleas of justification put forward on their behalf? They are two—the advance of knowledge, and the increase of power of beneficence to humanity.

How far those pleas bear scientific investigation, I leave it for greater experts to examine. For my own part, I will but say in passing, that *à priori*, as a believer in God, I doubt them, for (to quote once more some noble words of the Bishop of Durham), I must hold that, “If He, Who made us, made all other creatures also; if they find a place in His providential plan; if His tender mercies reach to them—and this we, as Christians, most certainly believe:—then I find it absolutely inconceivable, that He should so have arranged the avenues of knowledge, that we can attain to truths, which it is His will we should master, only through the unutterable agonies of beings which *trust* in us.” Perhaps it is not presumptuous to add (not without strong support of scientific opinion) that I doubt the validity of scientific inference from experiments on animal natures, as to treatment of that human nature, which in so many physical points differs from theirs. And *à posteriori* (so far as a layman can judge), while I hear much confident assertion, I fail to see that sufficient evidence has yet been given in general; and in some famous cases I see that it has been confidently offered, and then tried and found signally wanting.

But these considerations I touch only in passing, for they concern not my main argument. Suppose these pleas to be true in fact; I deny utterly that they furnish any grounds of justification.

The advance of knowledge—God forbid that we should decry or depreciate it! In itself, without looking to results, it is a glory of man; it is (be it said reverently) an imitation of God. But its claim can never be absolute. Righteousness and love are greater than knowledge. With what profound truth does the story of man’s



first Temptation show us, how the desire of knowledge, unrestrained by the great moral law of God's will, taught to explain away that law, and refer it to a base origin, was the secret of the fall from true humanity! We have been warned on the highest modern authority that intellectual research, especially of the physical kind, can produce a "moral atrophy," a "colour-blindness" to what is beautiful and lovely.

The increase of beneficence to suffering humanity—it is nobler still, for it is even more clearly the likeness of the God who is Love. But yet, whether for an individual, or for humanity at large, to seek its own supposed good at all hazard of wrong-doing and cruelty to the weaker creatures of God, is surely of the very essence of selfishness; to hold that the increase of physical comfort, the removal of physical pain, the prolongation of physical life, are the supreme objects, for the sake of which we may neglect our higher humanity, is simply a worship of the flesh, unworthy of a true man, impossible to a true Christian; to sin for these purposes against God's creatures, bound up with ourselves in the great chain of organic being, and committed to us, who are made in His image, and have a delegation of His sovereignty, is a prostitution of God-given power, which is almost a sacrilege.

IV. I submit to you, therefore, as thinking men, as believing Christians, that, even if these pleas were true, this scientific torture of sensitive creatures—for surely the plea that animals are insensible to pain is the last refuge of a desperate cause—is a thing which cannot be justified.

I appeal on this matter to your reason and conscience. Not that I am afraid of being denounced, or treated with the usual exasperating indulgence, as a sentimentalist, even a "shrieking sentimentalist;" for possibly a "shriek" of indignant warning to society in grave moral danger may not be a quite unpardonable sin. A man must be a poor statesman, and a still poorer moralist, who despises the right function of sentiment. It is, as I read it, a glory of Christianity, to have rescued sentiment from contempt, and to have sublimed it, by harmony with reason and conscience, to love. But it is not by the easy method of harrowing up your feelings that I would proceed. I ask you to fix your conscientious attention on one question—Is this thing justifiable before God?

You cannot put away the question as if it did not concern you. In a country like this, all are responsible for laws which condone evil, and for the public opinion, far more powerful than even the law, which it originates and directs. And, if I may do so, I would earnestly appeal to my brethren of the clergy, who on all moral questions have so large a power, so sacred a responsibility, to think more carefully, to speak more plainly, to act more boldly, than the great bulk of them have yet done. Never was there a time when Christianity was more imperiously called upon, even by men, to justify by moral witness its authority and its very existence.

Do not be diverted from the main question by any side issues—such as that reference to other cruelties in the common business of life, or even in its sports, which the Lord Chief Justice of England in his pamphlet tears to shreds. To use the old homely proverb, “Two blacks do not make a white.” Other cruelties there may be, and there are, though I doubt whether there are any so deliberate as this. By all means let those who will attack them. I, for one, will raise no voice in their defence. But it is in relation to this cruelty that I call for your thought and your sympathy, and I refuse to be turned aside to any other.

Do not be silenced by appeal to scientific authority. Even on its own ground I decline to accept unhesitatingly without substantial evidence *dicta*, which have often, as it seems to me, proved to be utterly fallacious, in which the science of one day is contradicted by the science of another. But this question is a moral question. On this I absolutely refuse to put my conscience into another’s keeping; we can judge, we must judge (as we, in our turn, shall be judged), for ourselves.

Do not be troubled, again, by reference to the high character of the distinguished men, who approve this practice, though happily few of them adopt it, and by the accusation of presumptuously condemning them. I, for one, have learnt from the Master Himself to “judge no man.” Yet surely from the same Divine teaching (by word and by example) I learn to be “no respecter of persons,” but to speak out boldly in the name of God against whatever seems to me, consciously or unconsciously, to break His Supreme Law of Mercy.

With a deep sense of responsibility, but without a moment’s

hesitation, I call upon you to look at this question—as one of great moral and therefore religious significance—and at this alone. I do not desire here and now to suggest any special line of action. If the conscience be roused, if the mind be convinced, if the heart be touched, the will for every man will find the way of action. Look into the English law as it stands; while it so stands, maintain it resolutely against attacks upon its wholesome restrictions, and see that it is honestly and earnestly enforced. If you find, as I think you will find, that it is utterly insufficient, then—as in other like cases—work and persevere, in spite of ridicule and denunciation, to get it made what it should be. If you are forced, as I fear you will be forced, to the conclusion that practically no regulation can prevent this torture, then, at whatever cost, insist on prohibition, and so at any rate relieve the public conscience from terrible responsibility. But (as I have said) there is a power, above and beyond law, in public opinion. Be it ours to mould that power, as the Church has moulded it in all ages, not by the worldly wisdom of supposed expediency, not by the wisdom which trusts in cold and unrelenting intellect alone, but by the moral witness in the soul of “Sin, Righteousness and Judgment,” which our Lord declares to be the witness to the world of the Holy Spirit of God.

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LIGHT IN DARK PLACES.







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# LIGHT IN DARK PLACES,

BY

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FOR THE PROTECTION OF ANIMALS FROM VIVISECTION.

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## LIGHT IN DARK PLACES.

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THE following pages are intended to convey, in the briefest and simplest form, ocular illustration of the meaning of the much disputed word *Vivisection*. Some of the apparatus and of the furniture of the physiological laboratory, various modes of fastening the victims, and a selection of instances of divers experiments, have been arranged with the view of affording the reader by a few moments' inspection a truer idea of the work of the "torture-chambers of science" than can be obtained by the perusal of a vast quantity of letter-press description.

Every one of the illustrations is a reproduction, in most cases of reduced size, by photo-zincography, of the engravings and wood-cuts in the standard works of the most eminent physiologists. In every case the reference to the original work is given, and the perfect accuracy of the reproduction guaranteed. Nothing has been added and nothing has been taken away, except somewhat of the strength



and vividness of the larger originals, which have been lost in the reproduction. Thus every illustration in this pamphlet may be taken with certainty to be *a Vivisector's own picture of his own work*, such as he himself has chosen to publish it.

Further, it must be borne in mind that the experiments here exhibited, with the exception of two or three peculiar ones at the end, are not, as might be supposed, single instances of severe operations performed once or twice in a way by one particular physiologist. The greater number are, so to speak, *stock* experiments. They are gone over by each new recruit in the army of science who takes up the study of the organs concerned, and may be likened more properly to the scales and exercises of the musical practitioner, than to the purposeful operations of the surgeon. In the editor's (Dr. Burdon-Sanderson's) Preface to the *English Handbook of the Physiological Laboratory*, he says: "This book is intended for beginners in physiological work. It is a book of methods . . . designed for workers . . ." The whole large volume is in the form of a receipt-book for cookery. "Proceed as above" . . . "Divide the lingual nerve" . . . "A cannula having been placed in the carotid, a second manometer is placed," &c. "For this purpose, (asphyxia) a cannula must be fixed air-tight in the trachea," &c. "In these spasms, which accompany the final gasps of an asphyxiated animal, the head is thrown back, and they must be carefully distinguished by the student from the expiratory convulsions previously described,"—and so on through 558 pages. The great foreign treatises of Cyon, Claude Bernard, Paul Bert, and Livon, are to the same purpose.

Finally, as regards anæsthetics, it is needful that the reader should dispel from his mind all illusion on the subject. No defence of Vivisection is so frequently offered and so generally accepted as the assertion that, in the vast majority of experiments, the animals are rendered wholly insensible to pain by means of anæsthetics. Persons who shrink from the miserable subject naturally seize on this assurance with relief, and thenceforth turn a deaf ear to the advocates of the suppression of the practice. What is the truth of the case?

There are to be considered: 1st. Real anæsthetics (chloroform,

ether, nitrous oxide, &c.), 2nd, narcotics (opium, chloral, &c.), 3rd, doubtful anæsthetics (Curare).

1. REAL ANÆSTHETICS.—Chloroform and ether are most generally used for serious operations on human subjects, as nitrous oxide is only adapted for operations of very short duration. The action of chloroform and ether, however, is not identical on man and on the lower animals. Chloroform is a specially dangerous drug to dogs and rabbits. Professor Pritchard, M.R.C.V.S., giving his evidence before the Royal Commission, said: "With regard to dogs, I should never think of applying chloroform at all; I should think it very unsafe to do so. The dog has an intermittent pulsation; the heart's action is intermittent." (Q. 796-803.) Mr. T. R. Lewis, M.B., F.R.S., Assistant Professor of Pathology in the Army Medical School, lamented that chloroform is so very fatal to rats and rabbits, as also to puppies and young dogs. He said: "Even in large healthy dogs, we calculate on losing one in five through this cause alone." Dr. Geo. M. Sternberg, in his *Manual of Bacteriology*, 1892, p. 97, says: "Rabbits, especially, are very apt to die from chloroform, no matter how carefully it may be administered." Dr. George Rolleston said before the Royal Commission: "It is not so easy a thing to know when you have an animal thoroughly anæsthetised; and what is more, some animals recover with much greater rapidity than others of the same species from the same doses of anæsthetics." . . . . "The whole question of anæsthetising animals has an element of uncertainty about it." (Q. 1,349-50.)

2. As regards NARCOTICS; here is what Claude Bernard says of the most important of them in his *Physiologie Opératoire*, p. 155 (Paris, 1879). After a large dose of morphia, he says the dog "still feels pain though he has, so to speak, lost the idea of defending himself."

"Placé dans la gouttière à vivisection il y demeure immobile et stupefié; jamais il ne cherche à mordre, quelque opération qu'on lui fasse subir. Il sent la douleur mais il a, pour ainsi dire, perdu l'idée de la défense."

3. OF CURARE, which the present day vivisector is very anxious to pass off as an anæsthetic, Claude Bernard, the greatest



authority on the subject, as he is the greatest discoverer of the effects of Curare, says in *Revue Scientifique*, 1871-2, p. 892 :—

“Curare acting on the nervous system only suppresses the action of the motor nerves, leaving sensation intact—Curare is not an anæsthetic agent.” Sixième Année, p. 591: “Curare renders all movement impossible, but it does not hinder the animal from suffering and from being conscious of pain.” These opinions of his are to be found repeated several times in the same work. Even in his latest remarks on the same subject (vol. 1874-75, p. 1117) he refers to experiments where the patients on their recovery had been able to relate “that during paralysis they had been fully aware of their existence, and of all that happened around them.” Vulpian, also, the next best authority, says in the latest work, “*Leçons sur l'appareil vaso-moteur*,” Paris, 1875, Tom. 2, p. 660: “Curare does not act on the sensory nerves, or, at least, does not abolish their functions.” Kœlliker also demonstrates the fact that under the toxic influence of Curare sensibility remains absolutely intact. See *Dictionnaire Encyclopédique des Sciences Médicales*, Ser. 1, Tom. 24, 1880, Art. *Curare*.

Again, Claude Bernard, in his classic paper “On Curare,” in the *Revue de Deux Mondes* for Sept., 1864, after quoting the opinion of travellers, and more especially of Waterton, says (p. 173) :—

Thus all their descriptions offer us a pleasant and tranquil picture of death by Curare. A gentle sleep seems to occupy the transition from life to death. But it is nothing of the sort; the external appearances are deceitful. In this paper it will be our duty to point out how much we may be in error relative to the interpretation of natural phenomena where science has not taught us the cause and unveiled the mechanism. If, in fact, we pursue the essential part of our subject by means of experiments into the organic analysis of vital extinction, we discover that this death, which appears to steal on in so gentle a manner and so exempt from pain, is, on the contrary, accompanied by the most atrocious sufferings that the imagination of man can conceive (and p. 182). In this motionless body, behind that glazing eye, and with all the appearance of death, sensitiveness and intelligence persist in their entirety. The corpse before us hears and distinguishes all that is done around it. It suffers when pinched or irritated; in a word, it has still consciousness and volition, but it has lost the instruments which serve to manifest them.

Can we require any more decisive evidence of the entire indifference of physiologists to the agonies they cause, than to read in a subsequent volume *by the same writer*, the complacent statements, made without a syllable of reproof or regret, to his fellow labourers in the torture-field :—

Curare is now employed in a vast number of experiments as a means of restraining the animals. There are but few observations of which the narrative does not commence by notifying that they were made on a curarised dog.—*Leçons de Physiologie Opératoire*, Paris, 1879, p. 168.



He believes that it creates "the most atrocious sufferings which the imagination of man can conceive" ("des souffrances les plus atroces que l'imagination de l'homme puisse concevoir"), and yet he is perfectly satisfied that it should be "employed in a vast number of experiments as a means of restraining the animals!"

Claude Bernard is now declared to have been wrong in his conclusions made after his careful experiments, that Curare paralysed the nerves of motion, while it left the nerves of sensation more alive to suffering than before, but is extremely valuable to the experimenter as a means of keeping the animal motionless as a corpse while he performs his work. We are told now, that Curare is an anæsthetic itself. We are also told that the whole inquiry must start afresh from experiments on Amœbæ and the lowest forms of life. Be it so, we are not "researchers," and claim no authority to decide such a point; but we may repeat the remark of a late physiologist, that if physiological research were good for anything and could determine any point whatever, it had effectually decided that *Curare* was not an anæsthetic and did not abolish pain.

Professor Gamgee, before the Royal Commission, said that he had performed some experiments with Curare, on children, and that in consequence he "was able to determine, very decidedly, that sensibility was not at all impaired; although there was a certain amount of paralysis of motion produced by the Curare, there was no affection of the sensory nerves."—*Report*, Q. 5,407.

We shall require something more than the *ipse dixit* of the new school of physiologists before we accept the convenient explanation of interested vivisectors in opposition to the positive experiments of such physiologists as Claude Bernard and Professor Gamgee as to the non-anæsthetic influence of Curare. When a committee of experimental physiologists has deputed one or two of its members to submit to a painful experiment performed under Curare alone we shall listen more respectfully to its decision.

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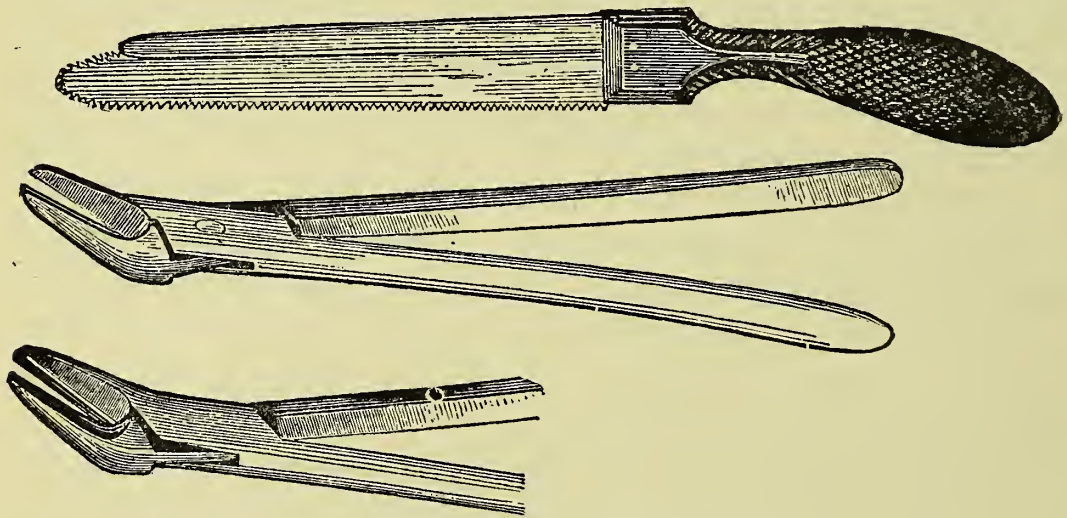
I now proceed to show what are the simplest tools of vivisectors.

The illustration below is taken from Livon's *Manuel de Vivisection* (Bailliere, Paris), p. 8, a book issued in 1882 from the new school of Vivisection in Marseilles. The three instruments are described respectively as—

“A little saw for sawing the vertebræ.”

“Bone forceps to open the vertebral canal.”

“Forceps of which the teeth cross like scissors intended to cut the bones of old animals.”



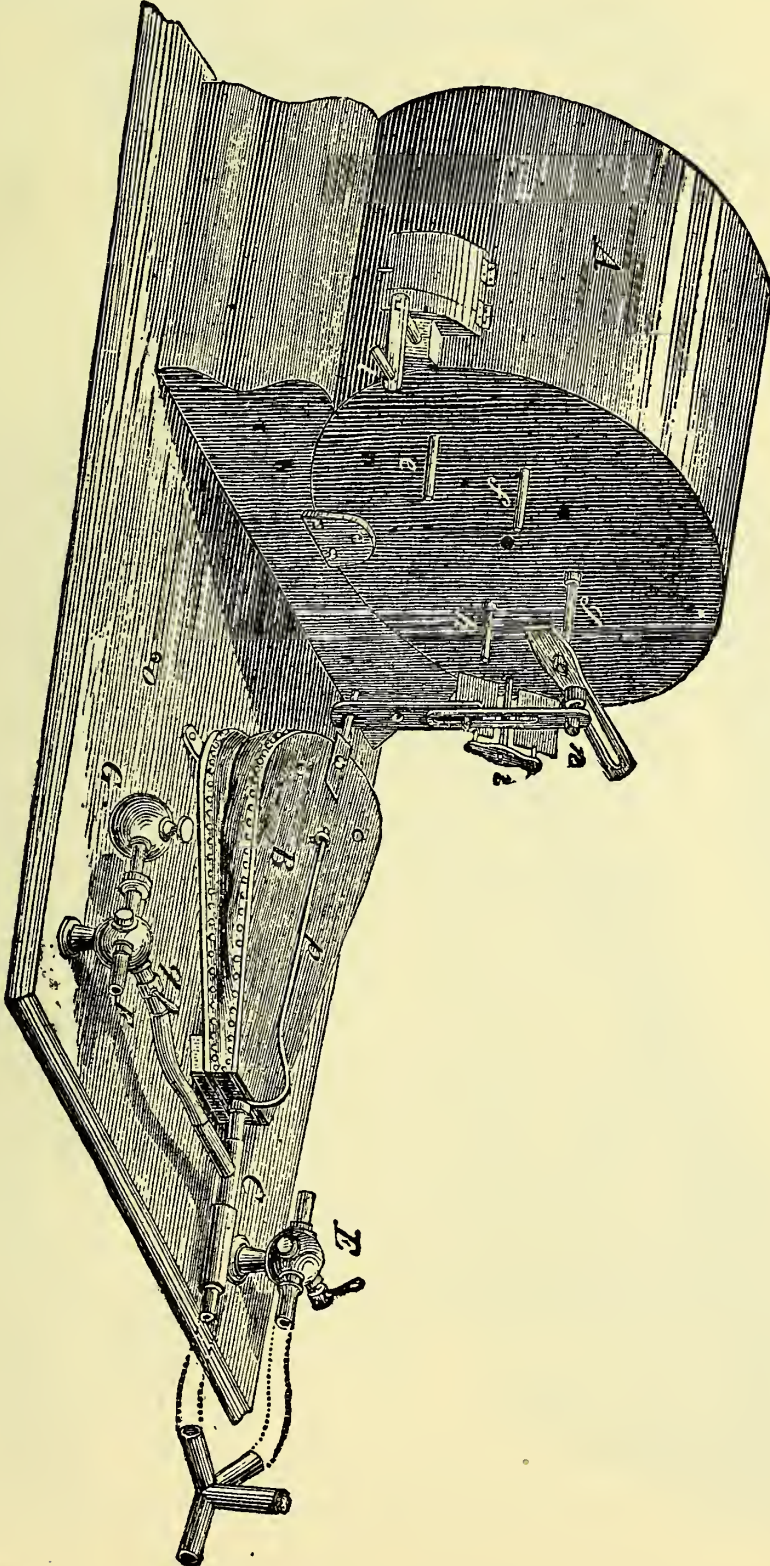
Livon's *Manuel de Vivisection*, p. 8.

We next reach (page 11) one of the many instruments in use (this is Schwann's) for sustaining Artificial Respiration. It is to be understood that when an animal is curarized the muscles are so completely paralyzed that it ceases to breathe, and would immediately die were not artificial breathing kept up by pumping air into the lungs. This is sometimes done by hand, but in large laboratories it is customary to keep a water-engine or steam-engine at work for the purpose. In Ludwig's laboratory it has been stated that the engine in question never ceases playing day or night, sustaining life in the dogs and other animals extended on the vivisectioning tables around.

There are an immense number of other instruments, some infinitely more elaborate and costly than this, in use in laboratories, and figured in the various treatises; and their various makers in London (Messrs. Hawksley, Messrs. Cettie and Co., Messrs. Elliot and Co.), and in Paris, Heidelberg, Berlin, Wurzburg, &c., are variously specified and recommended (vide in particular the list of



such instruments, and where they can best be procured, in Dr. Burdon-Sanderson's *Handbook*, p. 573). Plates exhibiting these costly instruments fill 43 large pages of Cyon's *Atlas*, and 21 of the English *Handbook*, and afford convincing proof of the enormous extent of a practice which can require and defray the expense of manufacturing such tools.



Instrument for producing Artificial Respiration.  
From Bernard's *Physiologie Opératoire*, p. 227.

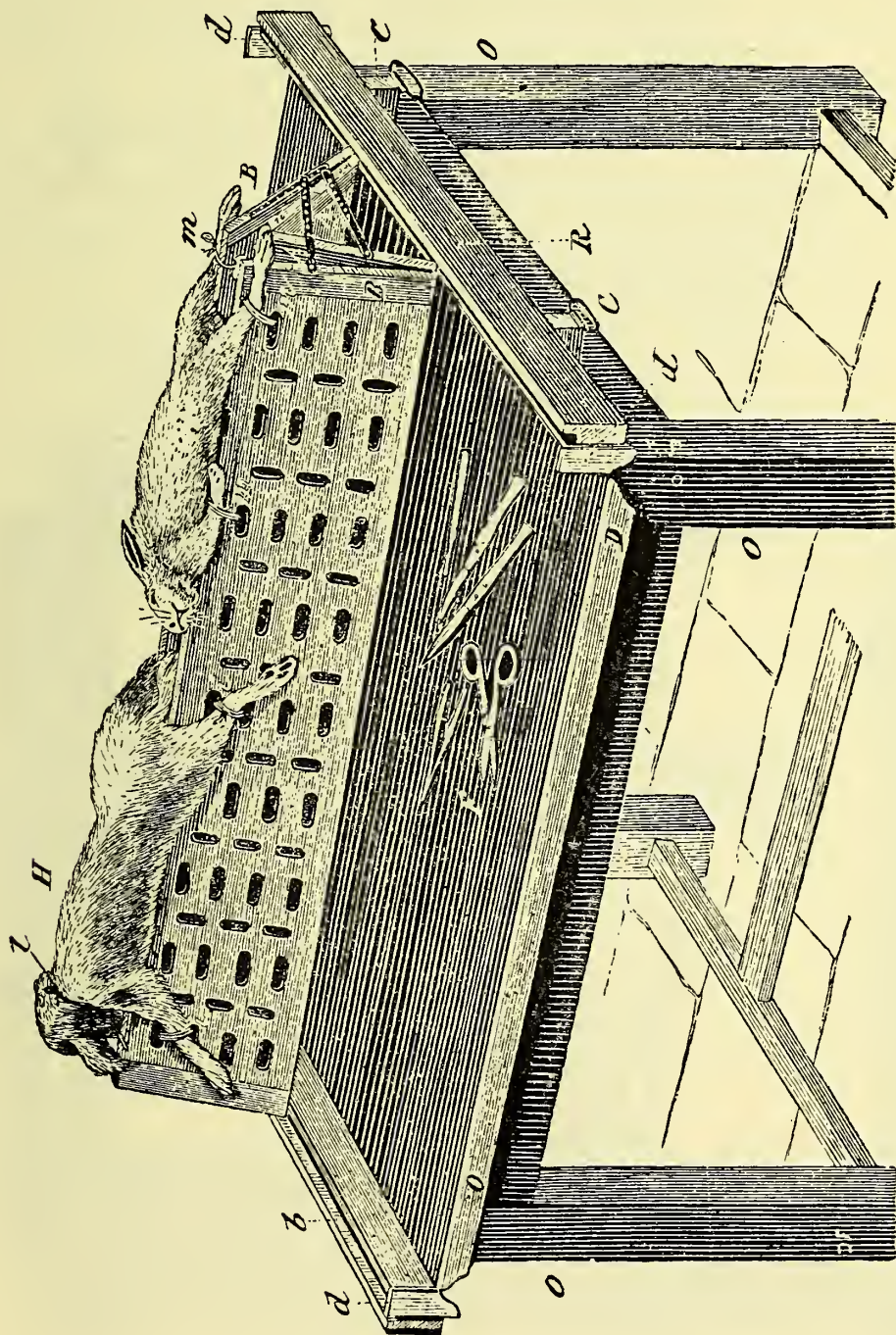






With respect to the last illustration, of the rabbit and dog on the trough with an elevated ridge, it will be seen how well the instrument would serve for the experiment lately shown to students in Florence, described in the *Zoophilist* for May 1st, as follows:—

The following story has been sent us on the best authority from Florence :—



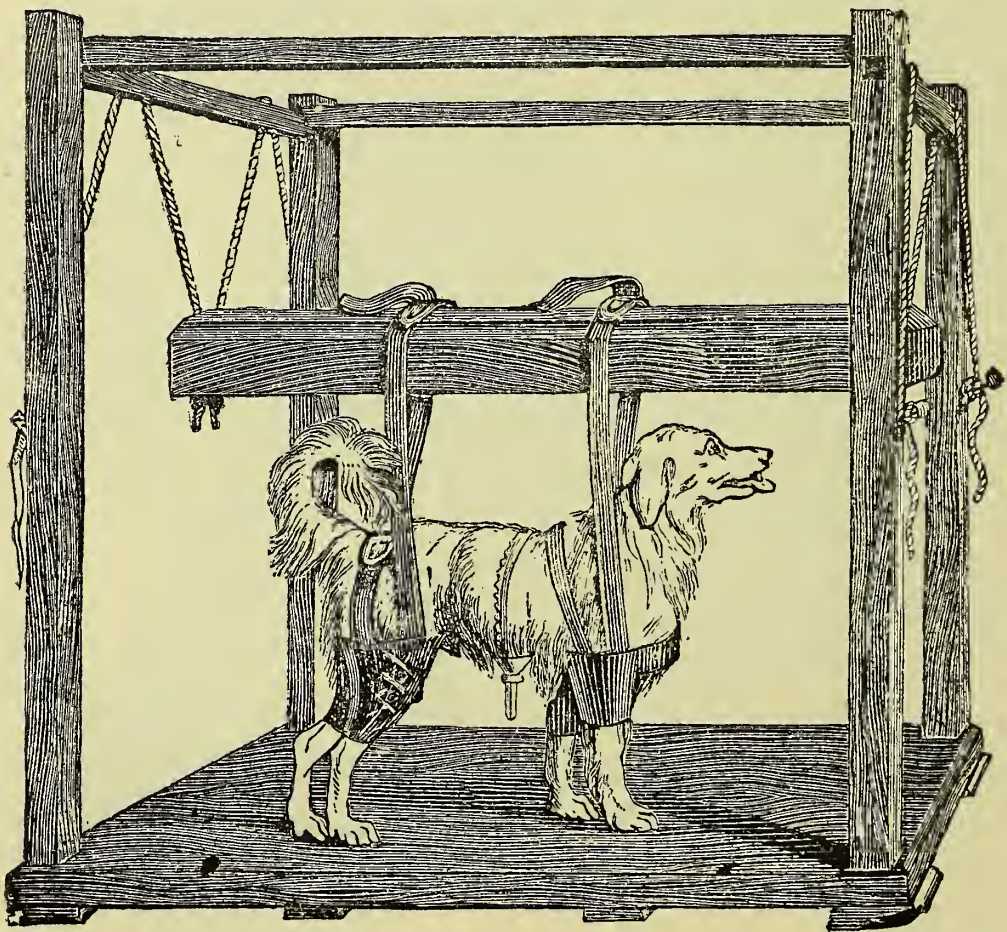
A Dog and Rabbit on a Torture Trough.  
From Bernard's *Physiologie Opératoire* p. 131.



A young man, son of a well-known and respected veterinary surgeon, gives this account of the spectacle he witnessed at a lecture :—

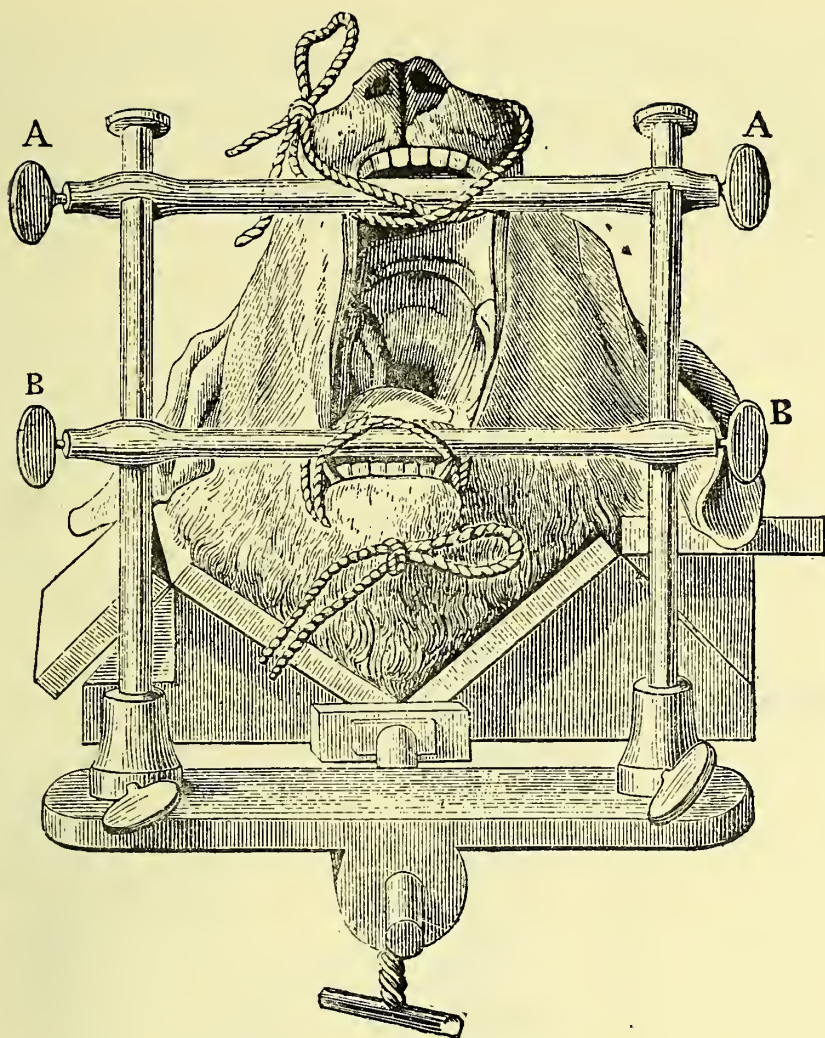
“A dog, with its four feet fastened to a table, and supported by a sort of *chevalet*” (no doubt the usual vivisectioning trough reversed), “had its skin cut and turned back all along the back from the neck to the tail. This was done in such a way that the spinal canal was laid bare, and the nerve roots exposed so that they could be touched like the strings of an instrument with a pair of forceps. To each touch responded a cry of agony like the notes of a violin. The scene was so revolting that after a time the young man left the place.”

Again, we have illustrations of elaborate methods of suspending a dog's body in an upright position, to be maintained for several days as in the treating of gastric or hepatic fistulas, and of a dog's head (page 15) when the jaw is to be kept open.



Cyon, Plate xxvi. Fig. 7.





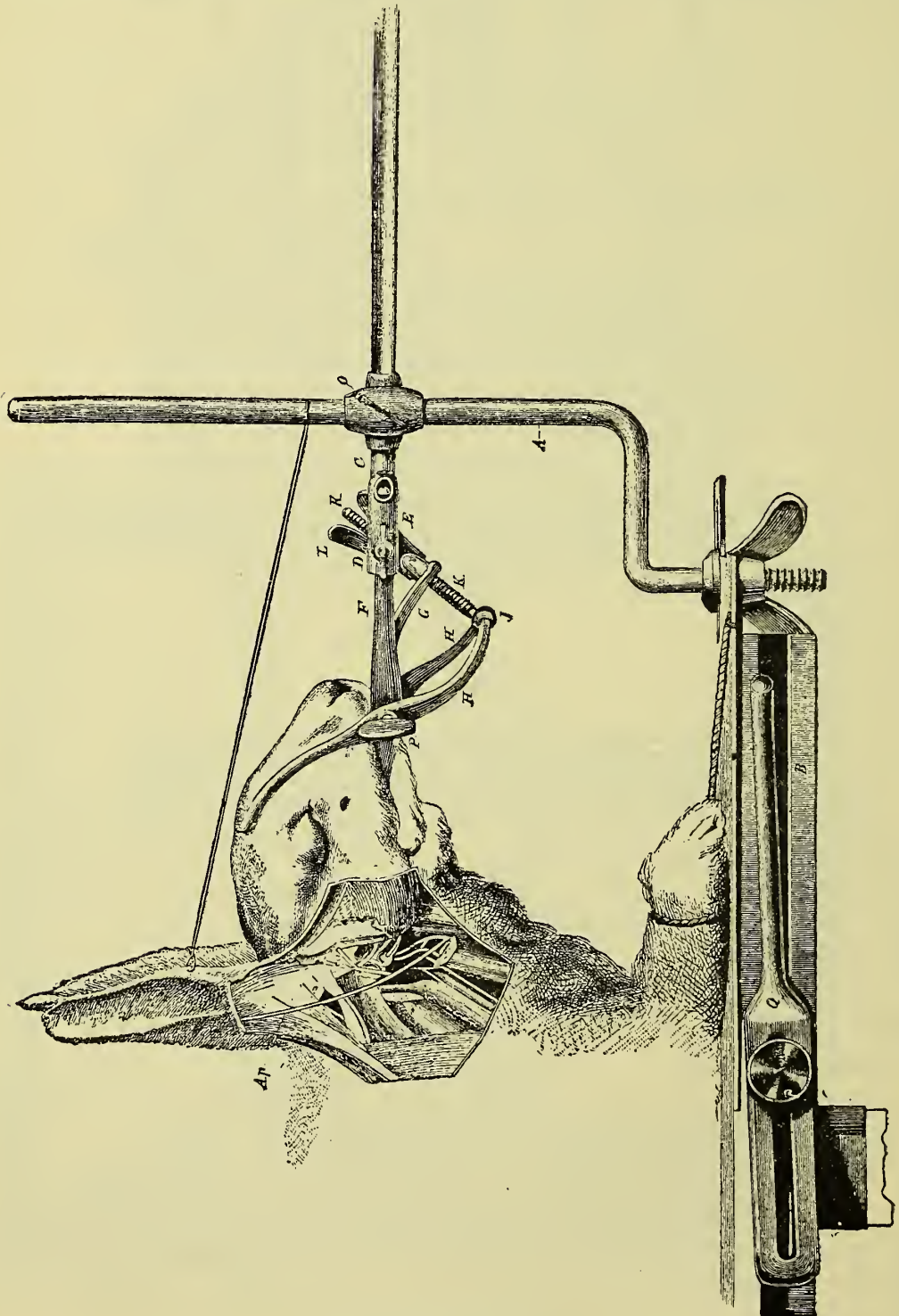
From Bernard's *Physiologie Opératoire*, p. 137.

The next illustration (page 16) represents an instrument very frequently mentioned in these works;—Czermak's Rabbit-holder, with the rabbit's head fixed in it, and the nerves of the neck dissected out. This illustration (including some anatomy of the parts as well as the actual vivisection) is from M. de Cyon's *Methodik der physiologischen Experimente und Vivisectionen* (Giessen, St. Petersburg, 1876).

It is in the preface to these volumes that M. de Cyon gives his well-known description of a true vivisector:—

“The true vivisector must approach a difficult vivisection with the same joyful excitement, and the same delight, wherewith a surgeon undertakes a difficult operation, from which he expects extraordinary consequences. He who shrinks from cutting into a living animal, he who approaches a vivisection as a disagreeable necessity, may very likely be able to repeat one or two

vivisections, but will never become an artist in vivisection. He who cannot follow some fine nerve-thread, scarcely visible to the naked eye, into the depths, if possible sometimes tracing it to a new branching—with joyful alertness for hours at a time; he who feels no enjoyment when at last, parted from its surroundings and isolated, he can subject that nerve to electrical



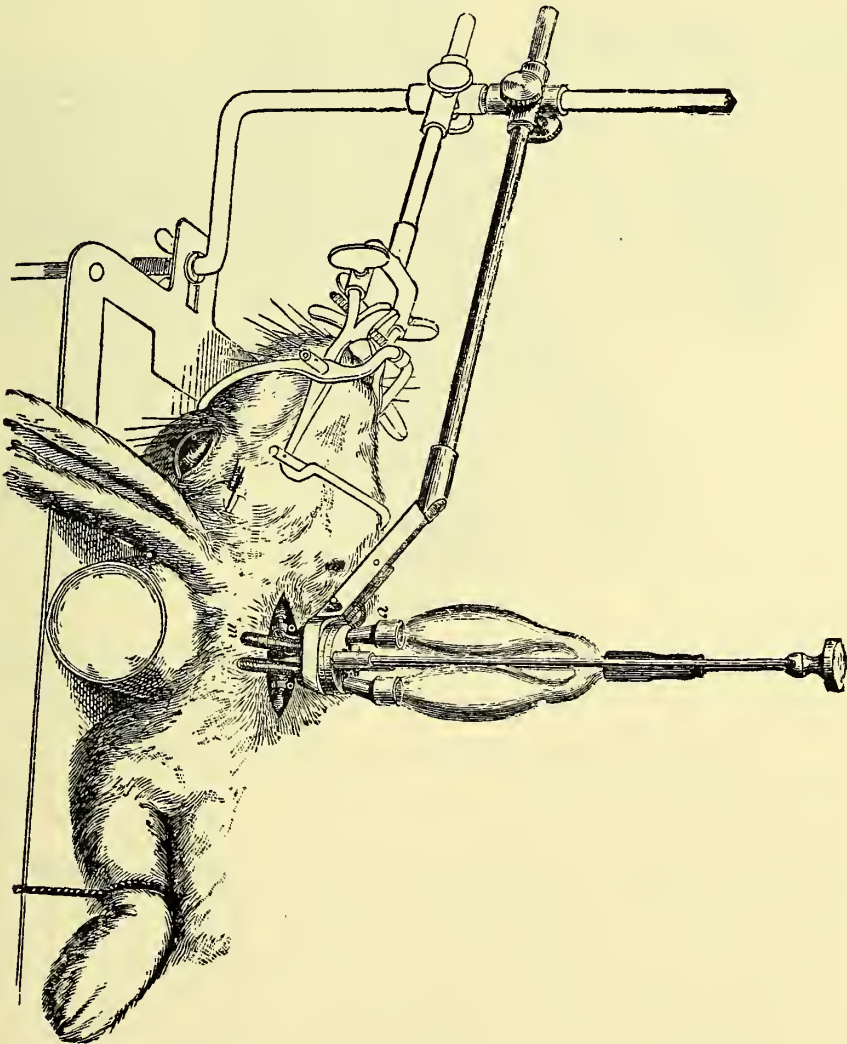
Cyon, Plate vii.

Czermak's Rabbit-holder, with nerves of Rabbit dissected out, and anatomy of the parts.



stimulation ; or when, in some deep cavity, guided only by the sense of touch of his finger-ends, he ligatures and divides an invisible vessel ; to such a one there is wanting that which is most necessary for a successful vivisector. The pleasure of triumphing over difficulties held hitherto insuperable is always one of the highest delights of the vivisector. And the sensation of the physiologist, when from a gruesome wound, full of blood and mangled tissue, he draws forth some delicate nerve-branch, and calls back to life a function which was already extinguished—this sensation has much in common with that which inspires a sculptor, when he shapes forth fair living forms from a shapeless mass of marble.”—*Methodik*, p. 15.

Here is another machine, invented by Ludwig, one of the leading members of the Leipzig Society for Protection of Animals, and, at the same time, the head of the largest physiological laboratory in the world.

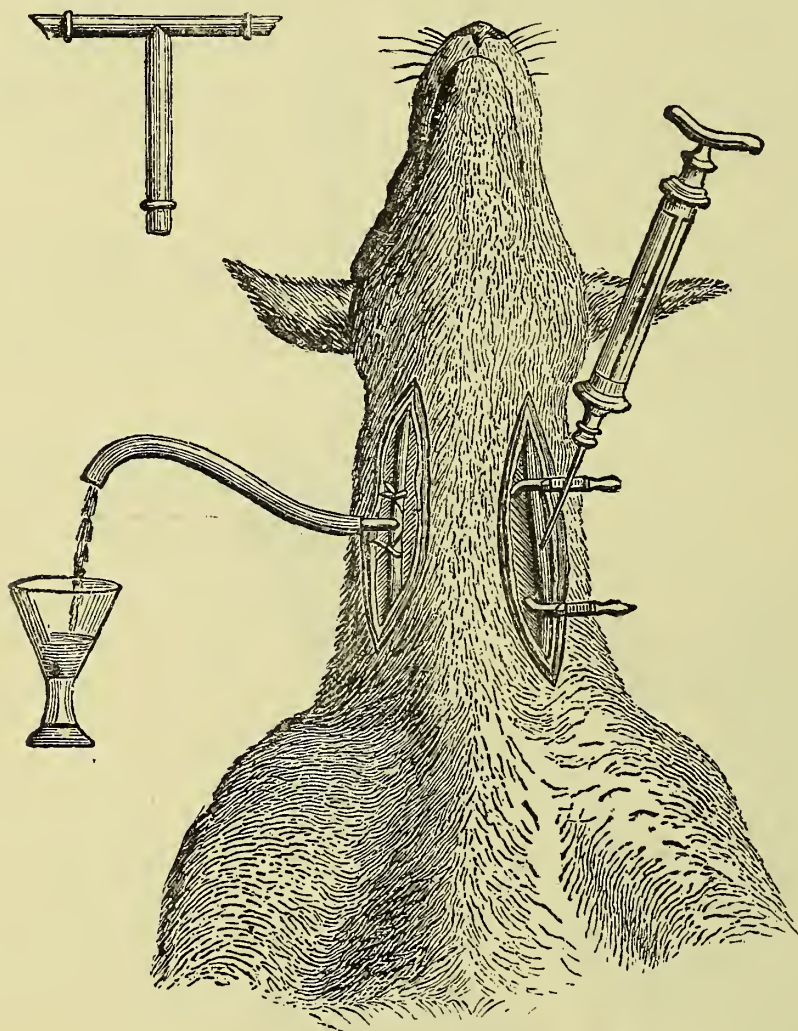


Cyon, Plate xxii.

Ludwig's Machine for measuring the rate of the blood-current in arteries of rabbits.



The next illustration (page 18) exhibits one of the minor processes of vivisection, an experiment intended to test the time required for poisons to circulate through the system.

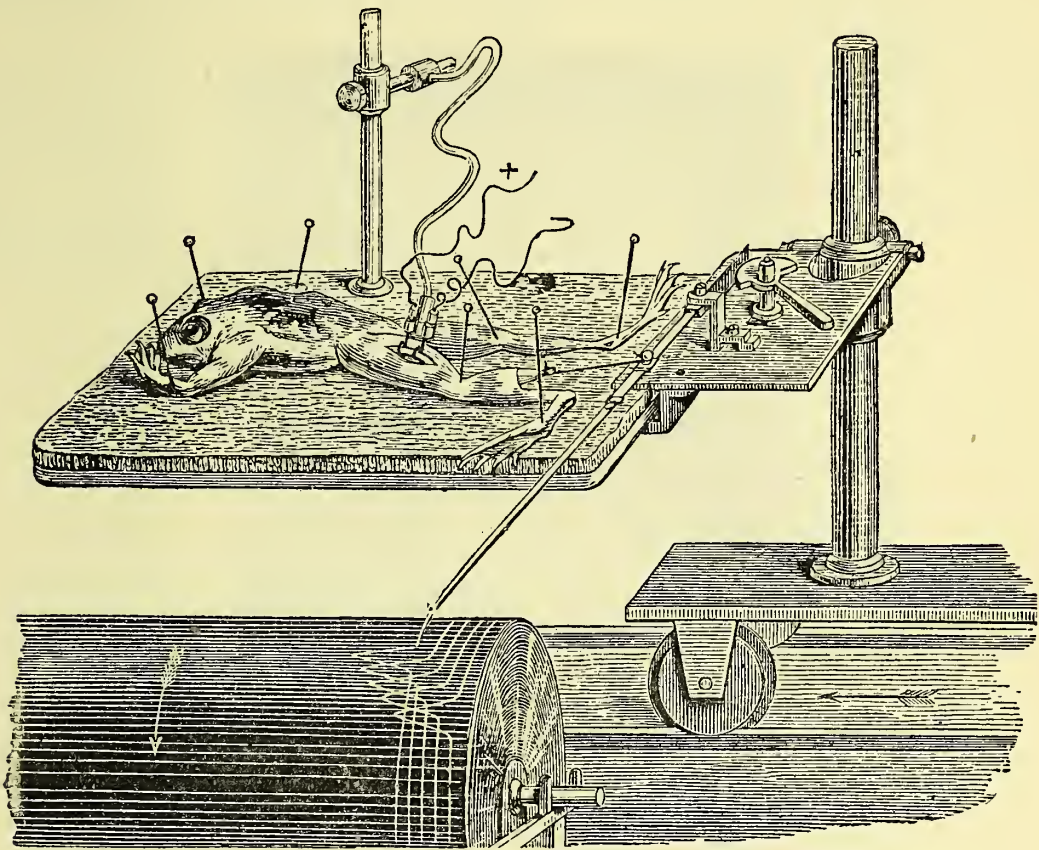


Experiment for testing the time required for injected poisons to traverse the circulation.

From Bernard's *Physiologie Opératoire*, p. 372.

Here (page 19) is an experiment (not a painful one, for the frog is already pithed and practically dead), exhibiting the manner in which frogs,—the poor creatures which Marshall Hall blasphemously called “God’s Gift to the Physiologist,”—are pinioned on a piece of cork for experiments with what is termed a mycograph.

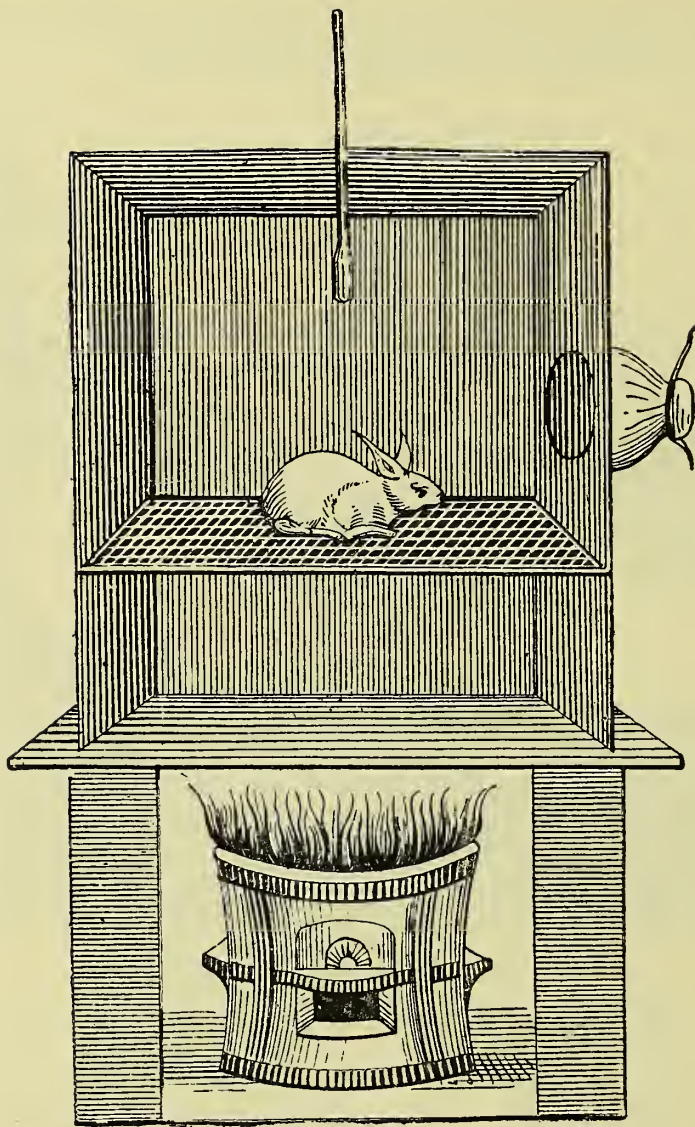
The illustration is taken from the second volume of the *Handbook of the Physiological Laboratory*, Plate ciii.



*Handbook of the Physiological Laboratory*, Plate ciii.

We now come (page 20) to an illustration which will be recognised by many readers—the first of the two Stoves invented and used by Claude Bernard. It is taken from his *Leçons sur la Chaleur Animale*, Paris, 1876, p. 347, and represents, as M. Bernard states, his “first apparatus for the study of the Mechanism of Death by Heat.” Of the results of experiments made with it he prints several tables. These tables show how dogs, pigeons, and rabbits baked in the stove, expired at the temperatures of  $90^{\circ}$  or  $100^{\circ}$  Cent. in 6 minutes, 10 minutes, 24 minutes, &c., and at higher temperatures at different intervals; and again how, when, the apparatus formed a hot bath (*i.e.* the animal was boiled instead of baked alive), a different scale of heat and subsequent death was observed. A small dog placed in a temperature of  $55^{\circ}$  expired after 8 minutes, and so on. Again, another series of results were obtained when the head of the victim was kept outside the stove, while its





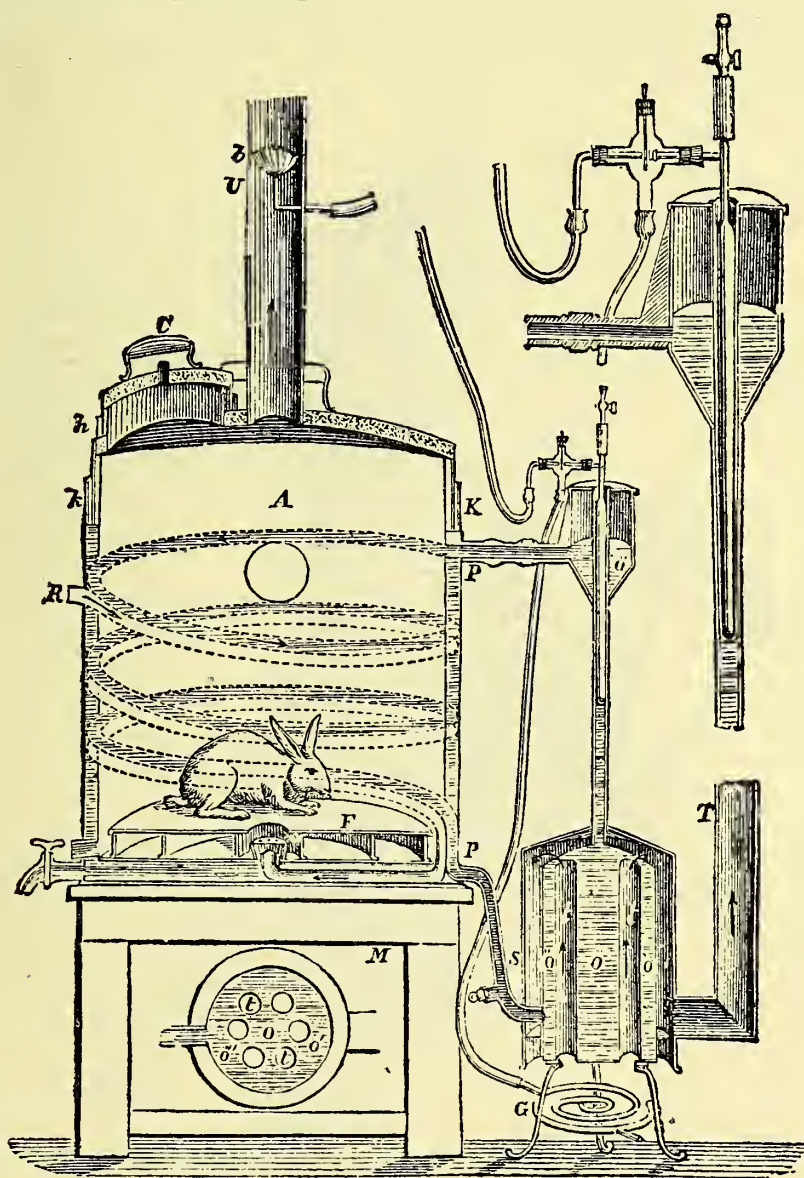
Bernard's *Leçons sur la Chaleur Animale*, p. 347.

body was baked or boiled. "The animals" (M. Bernard notes, page 356) "exhibit a series of symptoms always the same and characteristic. At first the creature is a little agitated. Soon the respiration and circulation are quickened. The animal opens its mouth and breathes hard. Soon it becomes impossible to count its pantings; at last it falls into convulsions, and dies generally in uttering a cry."

In a subsequent table M. Bernard gives the particulars of the deaths in this apparatus of seventeen dogs and of numerous rabbits and pigeons; and then proceeds in the next lecture to show his audience the diagram of another and more elaborate stove, in which many other series of animals were sacrificed.



Here (page 21) is the second and more elaborate stove invented and used by M. Bernard, of which the aspect is less familiar. He says of it, p. 361:—"The machine which served our first experiments presented an imperfection which rather complicated the phenomena, and might in a certain degree vitiate the appreciation of the action of temperatures on living beings. . . . The machine of which we have recently availed ourselves, has not this inconvenience—" (Then follows a long description.)

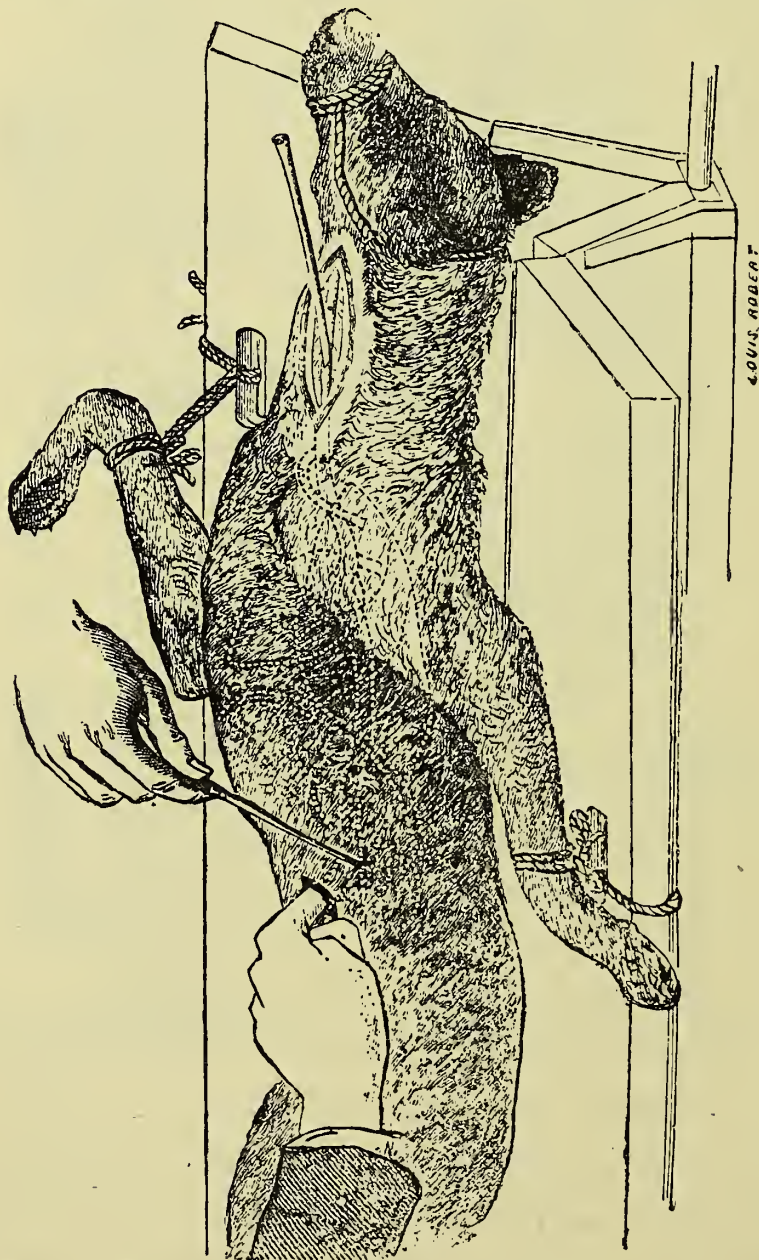


Bernard's *Leçons sur la Chaleur Animale*, p. 363.

"In the stove we place a sparrow. The temperature is about 65° (Centigrade). At the end of a minute we see the animal open its beak, manifest an anxiety which becomes more and more lively, breathe tumultuously, then fall and die. . . .

We try the same experiment on a rabbit. The same series of phenomena are exhibited, but more slowly, for it only dies at the end of twenty minutes. . . . .”

I now come to experiments in what is called Catheterism. They are described at great length in Claude Bernard's *Physiologie Opératoire*. The illustration (page 22) represents catheterism of the blood-vessels, showing how long flexible tubes are inserted at some convenient part of a blood-vessel, and then pushed along into the different parts of the heart and blood-vessels. Blood may



From Bernard's *Physiologie Opératoire*, p. 282.



thus be obtained from a given part for analysis ; or the temperature may be ascertained by pushing thermometers into such otherwise inaccessible regions. In these experiments there is no pretence of giving anæsthetics ; and as a matter of fact as well as logic none are given, for they would greatly interfere with the results when a careful analysis is to be made of the blood so obtained from special regions, or when it is a question of the temperature which normally exists there.

To the above description we may add that the jugular vein in the neck of the bound-down and muzzled animal has first been carefully dissected out and opened into, and, through the opening thus made, the bent tube or catheter has been inserted and pushed down through the heart into the great vein which brings the blood from the liver and hinder part of the body.

The next figure (page 24) represents a dog with the salivary glands, and the nerves supplying those glands, exposed. A cannula (small pipe) is fixed into the duct of the gland. A muzzle of an elaborate kind is placed upon the jaws.

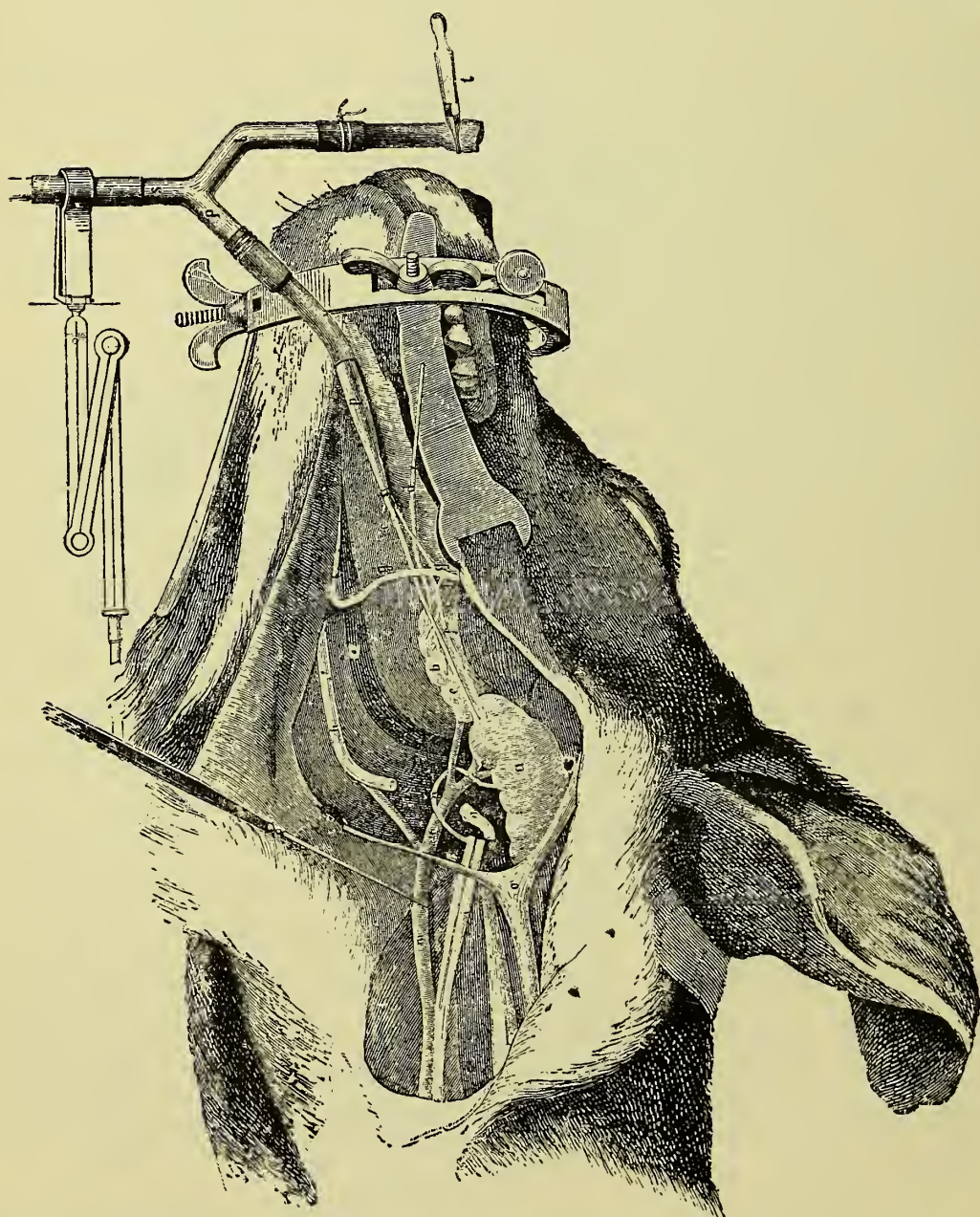
M. de Cyon in his article in the *Contemporary Review*, April 1883, mentions this drawing (which was one of those exhibited life-size on the hoardings of London in 1877), and asserts that it was drawn from the dead body of the animal. It may be possible that the actual dog from which M. de Cyon made his sketch was at that moment no longer living, but that the hideous mutilations exhibited in the drawing had been inflicted while he was still living is proved by two circumstances,—one by the presence of the elaborate muzzle, which assuredly no one would have placed on the corpse of a dog,—and secondly, by the presence of the cannula fixed into the duct of the salivary gland ; a gland which of course, like any other, ceases to secrete at death, and into which therefore it is absurd to suppose a cannula would have been inserted after death. M. de Cyon's assertion that the dog represented is a dead one is also thoroughly disposed of by an extract from his own book quoted in an excellent letter by Mr. Ernest Bell published in the *Spectator*, April 7th, 1883. Speaking of the plates in M. Cyon's work—

“When he tells us that these plates are, ‘of course, drawn from the dead



body of the animals,' he probably is speaking the literal truth as regards the plates, but in as far as he wishes us to infer that the operations they represent were done on the dead body, he is saying what his books show to be untrue. For, concerning one of the plates (No. xv.), I find on p. 264 of the work the following paragraph :—

‘If the experiment is made only for demonstration, one can drug the animal beforehand with chloral, chloroform, or curari; and if the last named poison is applied, artificial respiration must be used. If, on the other hand, one wishes to use the experiment for purposes of observation, particularly if the investigation concerns the influence of the circulation on the

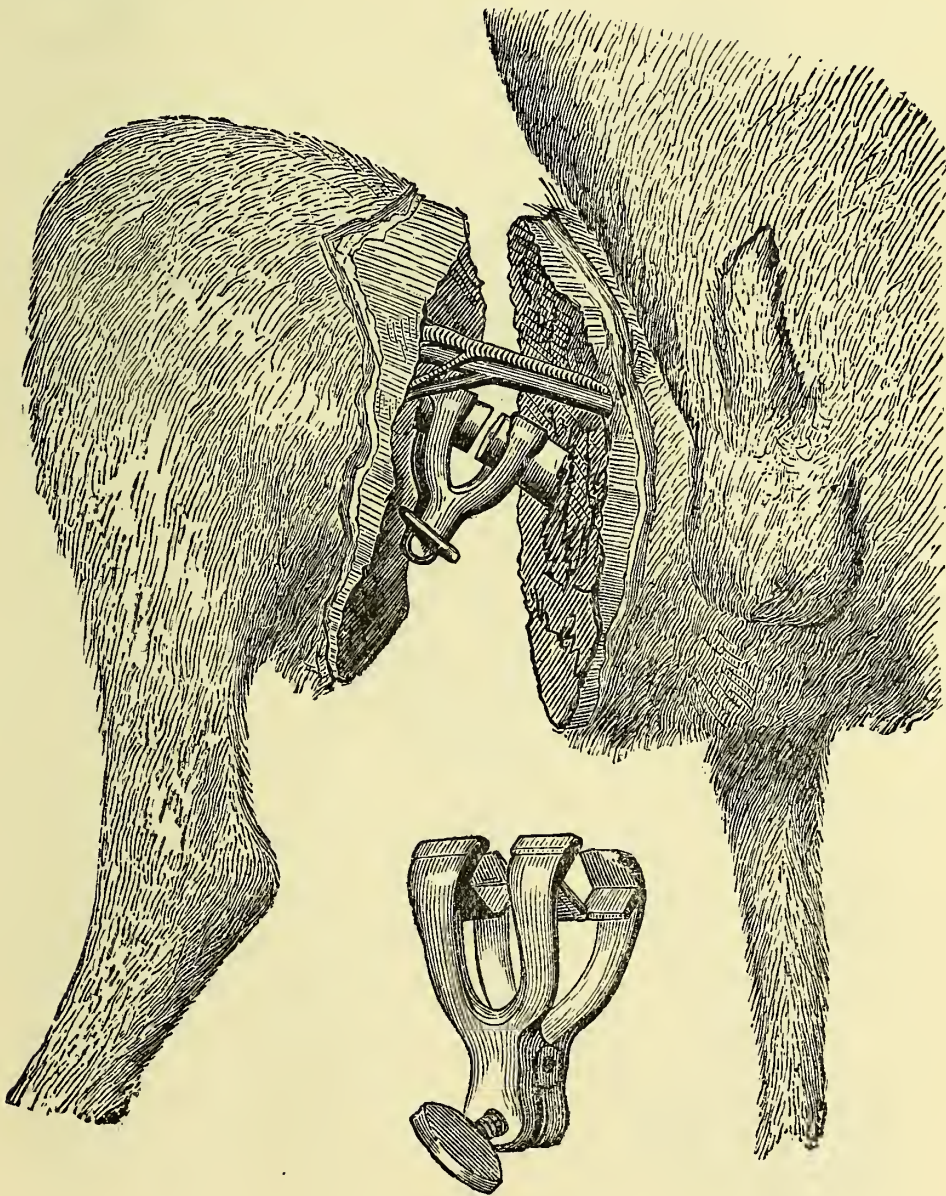


From Cyon's *Atlas*, Plate xv. (See preceding page.)



activity of the glands, it is better to avoid these drugs, on account of their influence on the circulation. One should choose for the experiment strong, lively animals, which have been well fed for a few days previously."

The next figure shows the limb of a dog entirely severed, including the bone, with the exception of the main artery and the vein through which strychnine when injected passes into the trunk. This experiment is now done under anæsthetics, but Majendie devised and continually repeated it many years before chloroform was discovered.



From Bernard's *Physiologie Opératoire*, p. 337.



The following illustration (page 26) is the triumph of M. Paul Bert's genius, and certainly exhibits in a remarkable degree the fitness of that gentleman to exercise (as he did two years ago) the function, under M. Gambetta's Government, of Minister of Worship and Public Instruction. So proud is M. Bert of this achievement in thus transforming a living dog into the resemblance of a piece of wood (*un morceau de bois*) that his portrait has been exhibited in Paris holding up the tortured animal in the attitude depicted.



Paul Bert's *Pression Barométrique*, p. 800.

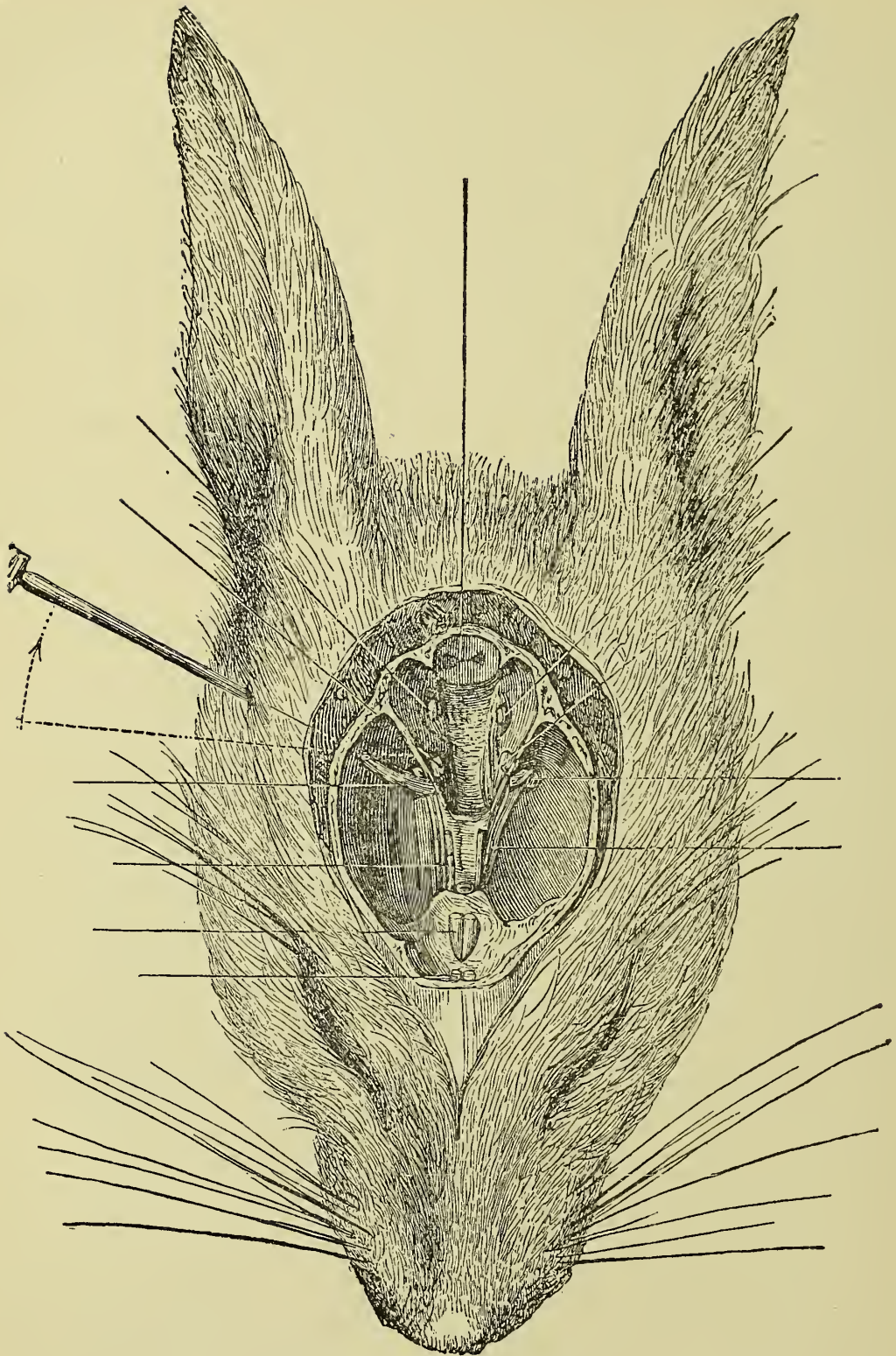


“Let us come,” says M. Bert in his large book on *La Pression Barométrique*, p. 800, “to the description of the convulsive attack (produced by placing the victim for hours under compressed oxygen). It is really curious and frightful. (*effrayante*.)

Let us take a case of medium intensity. When the animal is taken out of the machine it is generally in full tonic convulsions. The four paws are stiffened, the trunk is recurved backwards, the eyes are starting from the head, the jaws clenched. Soon there is a sort of loosening to which succeeds a new crisis of stiffenings with clonic convulsions, resembling at once a crisis of strychnine poisoning, and an attack of tetanus . . . Sensibility is preserved . .

In lighter cases, instead of attacks so violent as this, one may lift the animal by one paw like a piece of wood, as Figure 61 shows. We observe disordered movements and local convulsions,” &c.

The next figure shows the head of a dead rabbit, of which the brain and top of the skull is removed to show the position of the nerves, and the instrument is exhibited piercing the head and reaching the nerves (the trigeminus) on which it is desired to operate. The description given by Cyon of the method of operation (*Methodik*, p. 512) is as follows: “The rabbit is firmly fastened to the ordinary vivisection table by means of Czermak’s holder. Then the rabbit’s head is held by the left hand, so that the thumb of that hand rests on the condyle of the lower jaw. This is used as a *point d’appui* for the insertion of the knife. . . . To reach the hollow of the temple the instrument must be guided forward and upward, thus avoiding the hard portion of the temporal bone and leading the knife directly into the cranial cavity. . . . The trigeminus then comes under the knife. Now holding the head of the animal very firmly, the blade of the knife is directed backwards and downwards and pressed hard in this direction against the base of the skull. The nerve is then generally cut behind the Gasserian ganglion, which is announced by a violent cry of agony (*einen heftigen Schmerzensschrei*) of the animal.”



Cyon's *Atlas*, Table xxxv.

The experiments of Ferrier on monkeys and of Goltz on the brains of dogs, involve different mutilations, with scooping out of the brains till, in some cases, they resemble, as Goltz has said, a "lately-hoed potatoe-field."



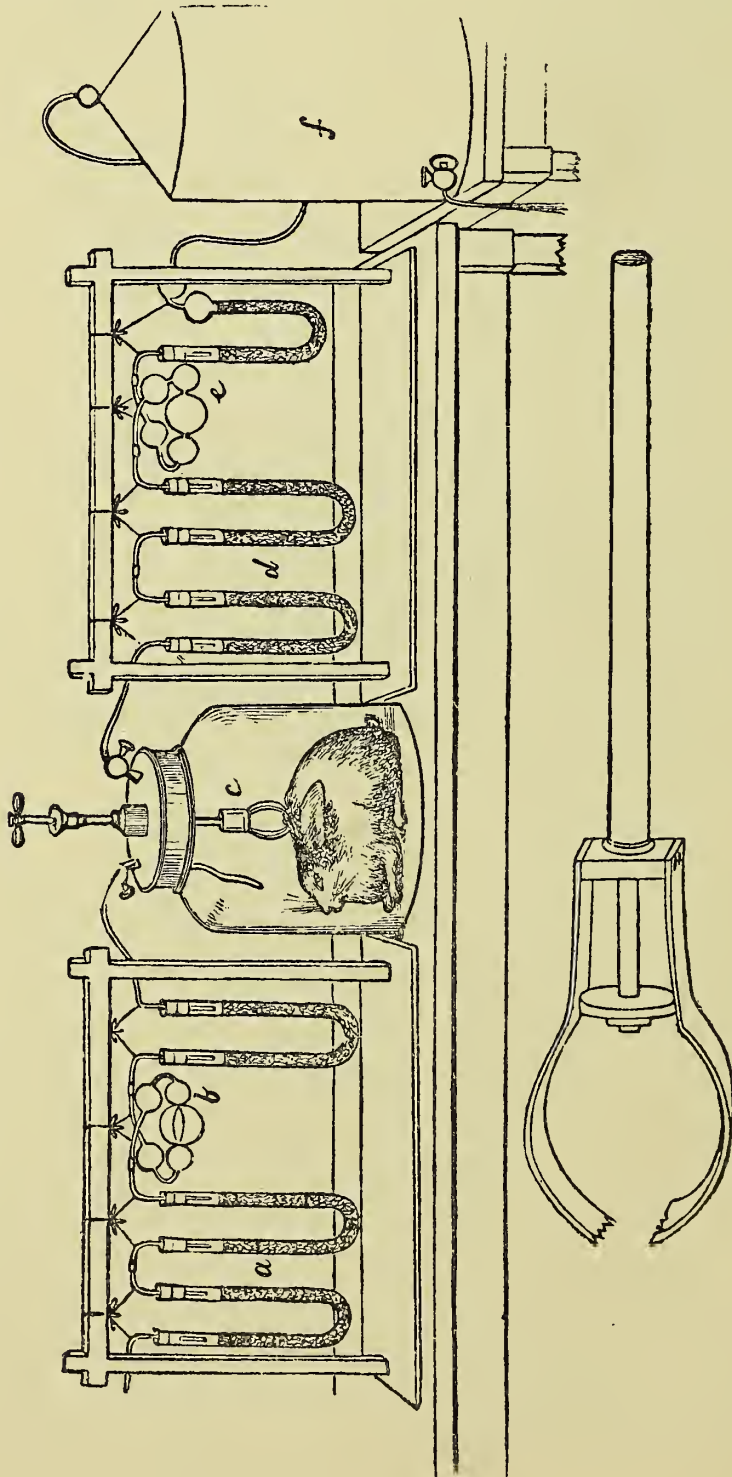
Lastly, we arrive at an illustration (page 30) which cannot be quite classed with the preceding, having been (so far as I know) merely the private delight or toy (he avows he has used it *con molto amore*) of a single physiologist.

Signor Paolo Mantegazza, a brilliant Italian gentleman, and *Bel'uomo*, author of books of travels, of tender reminiscences of *La Mia Mammà*; of a treatise on "Good and Evil," and on the "Hygiene of Love"; set himself to study the physiology and philosophy of Pain, on which he afterwards composed a work, *La Fisiologia del Dolore* (Florence, Felice Paggi, editore, 1880) from whence we derive our information and our illustration. To study pain properly it was necessary, so Professor Mantegazza thought, to create the most intense pain he could possibly contrive; and with this object in view he devised various combinations. One, which he found excellent, consisted in "planting nails sharp and numerous, through the feet of the animal, in such a manner as to render the creature almost motionless, because in every movement it would have felt its torment more acutely" (*piantando chiodi acuti e numerosi attraverso le piante dei piedi in modo da rendere immobile o quasi l'animale, perchè ad ogni movimento avrebbe sentito molto più acuto il suo tormento*). Further on he mentions that, to produce still more intense pain (*dolore intenso*) he was obliged to employ wounds followed by inflammation.

Going a little further he devised, and, with the help of an ingenious machinist in Milan, brought into working order, the instrument depicted in our illustration, which is exactly reproduced from his book, p. 98. This machine enabled him to grip any part of an animal with pincers with iron teeth, and to crush, or tear, or lift up the victim, "so as to produce pain in every possible way." The first series of his experiments, Signor Mantegazza informs us, were tried on twelve animals, chiefly rabbits and guinea pigs, of which several were pregnant. One poor little creature, "far advanced in pregnancy," was made to endure *dolori atrocissimi*, so that it was impossible to make any observations in consequence of its convulsions. In the second series of experiments twenty-eight animals were sacrificed, some of them taken from nursing their young, exposed to torture for an hour or two, then allowed to rest an hour.



and usually replaced in the machine to be crushed or torn by the Professor for periods of from two to six hours more. In the table wherein these experiments are summed up, the terms *molto dolore* and *crudeli dolori* are delicately distinguished, the latter being apparently reserved for the cases when the victims were, as the Professor expresses it, *lardellati di chiodi* (larded with nails).



In conclusion, the author informs us (p. 27) that these experiments were all conducted *con molto amore e pazienza*.

Such are a few, out of scores of illustrations which might be added, of the practice of Vivisection which its advocates strive to make the British Parliament and public believe is almost wholly painless to the victims, and involves nothing more serious than "scratching a newt's tail" or "exhibiting a frog's foot under a microscope."





THE  
USELESSNESS OF VIVISECTION

AS A METHOD OF SCIENTIFIC RESEARCH,

BY  
LAWSON TAIT, F.R.C.S., ETC.

*NEW EDITION, WITH NOTES.*

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READ BEFORE THE BIRMINGHAM PHILOSOPHICAL SOCIETY,  
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# THE USELESSNESS OF VIVISECTION

AS A METHOD OF SCIENTIFIC RESEARCH.

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I NEED not go into the general history of Vivisection, for it hardly bears upon the question to which I desire to limit myself; but I think it advisable to formulate a few preliminary conclusions before I come to my immediate subject, in order that I may clear the way for discussion, and show at once the grounds upon which I stand, for I find myself in a position adverse to the view adopted by the great majority of my professional brethren.

I dismiss at once the employment of experiments on living animals for the purpose of mere instruction, as absolutely unnecessary, and to be put an end to by legislation without any kind of reserve whatever. In my own education I went through the most complete course of instruction in the University of Edinburgh without ever witnessing a single experiment on a living animal. It has been my duty as a teacher to keep myself closely conversant with the progress of physiology until within the last four years, and up to that date I remained perfectly ignorant of any necessity for vivisection as a means of instructing pupils, and I can find no reason whatever for its introduction into English schools, save a desire for imitating what has been witnessed on the Continent by some of our most recent additions to physiological teaching. In Trinity College, Dublin, the practice has been wholly prevented, and on a recent visit to that



institution I could not find, after much careful inquiry, the slightest reason to believe that any detriment was being inflicted upon the teaching or upon those taught.

The position of vivisection as a method of scientific research stands alone amongst the infinite variety of roads for the discovery of Nature's secrets as being open to strong *prima facie* objection. No one can urge the slightest ground of objection against the astronomer, the chemist, the electrician, or the geologist in their ways of working; and the great commendation of all other workers is the comparative certainty of their results. But for the physiologist, working upon a living animal, there are the two strong objections: that he is violating a strong and widespread public sentiment, and that he tabulates results of the most uncertain and often quite contradictory kind.

I do not propose to deal with the sentimental side of the question at all, though no one can doubt it is a very strong element in the case as maintained by public opinion. I shall deal simply with the inquiry: Has this method of scientific research—Vivisection—contributed so much to the relief of suffering or to the advance of human knowledge as to justify its continuance in spite of the manifest objections to it? My own answer I shall try to give in the following pages, merely premising that an answer to justify vivisection must be clear and decisive, must be free from doubt of any kind, and, above all, it must not assume the protection of a "privileged mystery." This is a question, I maintain, which can be discussed by an educated layman just as well, perhaps better, than by a physician or a surgeon or a professional physiologist. It is a question chiefly of historical criticism, and we must have a conclusive answer concerning each advance which is quoted as an instance, how much of it has been due to vivisectional experiment and how much to other sources, and this amount must be clearly and accurately ascertained. It will not do, as has been the case in

many of the arguments, to draw such a picture as that of an amputation in the seventeenth century and one performed last year, and say that the change is due to vivisection. We might just as well point to the prisons of the Inquisition and then to one of our present convict establishments and claim all the credit of the change for the fact that our judges wear wigs. The real questions are: What advances in detail are due to vivisection? Could these advances have been made without vivisection? If vivisection *was* necessary for elementary and primitive research is it any longer necessary, seeing that we have such splendid and rapidly-developing methods in hundreds of other directions? Have we made complete and exhaustive use of all other available methods, not open to objection? And finally, are the advances based upon vivisection of animals capable of being adapted conclusively for mankind, for whose benefit they are professedly made?

It must be perfectly clear that to answer all these questions specific instances must be given, and that they must be analysed historically with great care. This has already been done in many instances, and I am bound to say, in every case known to me, to the utter disestablishment of the claims of vivisection.

Take the case of the alleged discovery of the circulation of the blood by Harvey, and it can be clearly shown that quite as much as Harvey knew was known before his time, and that it is only our insular pride which has claimed for him the merit of the discovery. That he made any solid contribution to the facts of the case by vivisection is conclusively disproved, and this was practically admitted before the Commission by such good authorities as Dr. Acland and Dr. Lauder-Brunton.\* The cir-

\* My attention has been drawn to a book which has just been published under the title of "Physiological Cruelty : or, Fact v. Fancy, by *Philanthropos*." This book purports to be a scientific contribution to the much-discussed question of Vivisection, but its author departs from the usual custom of writers on

culatation was not proved till Malpighi used the microscope, and though in that observation he used a vivisectional experiment his proceeding was wholly unnecessary, for he could have better and more easily have used the web of the frog's foot than its lung. It is, moreover, perfectly clear, that were it incumbent on any one to prove the circulation of the blood now as a new theme, it could not be done by any vivisectional process, but could at once be satisfactorily established by a dead body and an injecting syringe. In fact, I think I might almost say that the systemic circulation remained incompletely proved until the examination of injected tissues by the microscope had been made.

But supposing we grant, for the sake of argument, that such an important discovery had been made by vivisection, and by it alone, there still remains the all-important question, Is it necessary to use such mediæval methods for modern research? No one can doubt that the rude methods employed in Charles II.'s reign for obtaining evidence—the rack, the boot, the thumb-screw, and the burning match—were occasionally the means of accomplishing the ends of justice, but need we go back to them

scientific subjects in that his book is anonymous. There is, I think, sufficient evidence to reveal to any reader who is fairly well acquainted with the literature of this question the identity of the author, and if it would serve any good purpose I think I could name him. He is either ashamed of his book and his cause, or he has a cowardly nature, and for the present I shall let him accept which of the two stigmas he prefers.

He attacks me on several points, and I think it worth while to reply to him, the more that one of the points of his criticism has been enlarged upon in a paper by Mr. E. P. Copas, read before the Birmingham Philosophical Society on June 21st, 1883. This paper, together with the remarks of "Philanthropos," form the only adverse criticisms of my paper on the "Uselessness of Vivisection as a Method of Scientific Research" which I have seen, though it is now fifteen months since the paper was published. Mr. Copas did not make up his mind to criticise me for more than a year after the publication of the pamphlet, and after this long period of incubation his criticism was of the most trumperry kind. It was to the effect that I had misrepresented Dr. Acland of Oxford, and Dr. T. Lauder-Brunton, of London, when I said (p. 125)—"That Harvey made any solid contribution to the facts of the case (the discovery of the circulation of the blood) by Vivisection is conclusively disproved, and *this was practically*



now? The very necessity for ending them brought into use fresh and far less fallible methods, and I am inclined to make the claim for physiology, pathology, and the practice of medicine and surgery that the very retention of this cruel method of research is hindering real progress, that if it were utterly stopped the result would certainly be the search for, and the finding of, far better and more certain means of discovery. To urge its continuance on the ground that it was useful in the seventeenth century is just as reasonable as to ask the astronomer to go back to the cumbrous tackle by which Huyghens first worked his lenses.

If the method of obtaining evidence by torture was occasionally successful, there can be little doubt that as a rule it failed and led the inquirers astray. So I say it has been with vivisection as a method of research, it has constantly led those who have employed it into altogether erroneous conclusions, and the records teem with instances in which not only have animals been fruitlessly sacrificed, but human lives have been added to the list of victims by reason of its false light.

Those who have recently advocated vivisection seem to have

*admitted before the Commission by such good authorities as Dr. Acland and Dr. Lauder-Brunton."*

I have italicised the words objected to by Mr. Copas, who is a Bachelor of Arts of Oxford, and a Schoolmaster. His charge was, and it was supported by letters he had received from Dr. Acland and Dr. Lauder-Brunton, that they had made no such admission and entertained no such view.

It will be observed that I had cautiously used the words "practically admitted," though I am of opinion that I might have used a very much stronger expression and have said "actually admitted." Certainly this is the case with Dr. Acland.

The question of the discovery of the circulation of the blood has really nothing to do with the question of vivisection.

In the first place it is denied by many (and I made the denial years before I ever took part in the vivisection controversy) that the merit of this discovery is to be credited to Harvey. There are at least two other claimants for it, and as the elements of the controversy seem in every instance to be more in support of national *prestige* than of individual merit, the discussion has become somewhat farcical. But even if Harvey be admitted as the successful claimant there remain the questions,—Did he make any substantial contribution to his discovery by means of vivisection? and if he did, does it follow that such a course of

forgotten or to have ignored this most fatal objection, and as a rule they have indulged in a line of argument which is little more than assertion. For the purpose of this paper I have gone carefully over a large mass of literature upon the subject, and find that the bulk of it is altogether beyond criticism, because it does not deal with fact. Thus in a recent address on the subject by Professor Humphry, of Cambridge, there is a long list of advances in medicine and surgery, every one of which is attributed to vivisection solely because some experiments were mixed up in the history of each instance; but not an effort was made to show that the advances were due to vivisection. The proper method for the discussion of this subject is to take up a number of special instances and to subject them to careful criticism, chiefly by historical evidence, and as soon as the advocates of vivisection do this successfully I am prepared to grant their case. But hitherto they have failed.

Serial literature during the last few months has been singularly fertile in articles on the question of vivisection, and one commanding attention as an editorial is to be found in *Nature* of March 9th.

experimentation as the one he pursued (without any definite purpose at all as it seems to me) need be followed now? To answer the second question first, and dismiss it, every one must say, No, emphatically. The circulation of the blood could neither be discovered nor demonstrated now by anything but a dead body and a syringe. In fact the only approach to satisfactory and scientific experimentation which I find in Harvey's work on the circulation is given in a letter to Paul Slegel, where he describes an experiment with a clyster bag on a dead body. If he had pursued this line of research, and left living animals alone, he would have anticipated many very important discoveries which have been made since, and would have left no doubt whatever as to his claim to the establishment of the scheme of the circulation.

To answer the second question, and to reply alike to Mr. Copas and "Philanthropos," it is necessary to go carefully over the greater part of the evidence published by the Royal Commission. The first four witnesses examined, Sir Thomas Watson, Sir George Burrows, Sir James Paget, and Professor Sharpey, went largely into the discoveries concerning the circulation alleged to have been made by vivisection research, and (with the exception of Sir James Paget) they all boldly claimed Harvey's alleged discovery as of the chiefest



There the *a priori* argument for vivisection is put in the familiar illustration that "it would be more reasonable to hope to make out the machinery of a watch by looking at it, than to hope to understand the mechanism of a living animal by mere contemplation." Unfortunately there is a fault in the analogy, and it may be far more truly put in the converse, that it would be wholly impossible to repair the damaged movements of a watch by experimenting with an upright pendulum clock. There is a perfectly parallel dissimilarity between the functions and the diseases of animals and those of man.

In the same article is a quotation from the article of Sir William Gull, to the effect that the experiments of Bernard, in baking living dogs to death in an oven, have opened the way to our understanding the pathology of fever. In zymotic diseases the elevated temperature is not a cause of the disease but its consequence, and the answer to the argument is that not a single contribution of any kind has yet been made to the cure of scarlet fever. Its course cannot be shortened by one hour. Medicine is powerless for the cure of zymotics, whilst hygiene is all-powerful in their prevention, and the medicine of the future lies

value. They gave their evidence on the 5th and 6th of July, 1875, and it may be summed up in a sentence taken from the answer to question 394, by Professor Sharpey: "Then Harvey, as every one knows, discovered the true motion of the blood. That was by vivisection." A week elapsed, and by the 12th of July it was discovered that this was a statement which might easily be disputed, and could not be substantiated, and therefore Dr. Acland on the same point (991), in answer to Lord Winmarleigh, said, "It is not quite certain what argumentation led Harvey to that (the discovery of the circulation of the blood), whether it was the observation of the living structure or the contemplation of the dead structure." Now I submit that on the part of Dr. Acland this answer is not only a practical but an actual admission such as I have claimed.

In the work of "Philanthropos," at p. 146, that critic says: "With great care, therefore, I turn to the proceedings of the Royal Commission, to seek for the admission of the highly respectable authorities named (Dr. Acland and Dr. Lauder-Brunton). And I find that neither of these gentlemen says one word on the subject, or even indirectly refers to it." All I can say is, that in the copy of the Report of the Royal Commission now before me, at page 47, there is the admission of Dr. Acland which I have quoted.



wholly in this direction. Drugs are impotent, but sanitary laws can and will banish all these diseases, when they are completely understood and fulfilled.

The article continues that "between 1864 and 1867 seven new drugs were added to the Pharmacopœia, of which at least the two most useful, carbolic acid and physostigma, are due to vivisection." Upon the question of new drugs I can speak only with great reserve, for such a wholesome scepticism concerning drugs has been introduced by the medical schism of homœopathy, that I look upon all new drugs with great suspicion. Sir William Gull himself says he has not much belief in drugs. I fear most new drugs do more harm than good; some of them, such as chloral, most certainly have done so. I cannot learn that physostigma is of any practical service, and I have shown in my published writings that carbolic acid has done far more harm than good. Perhaps it would have been better if we had never heard of it. The question of the investigation of the actions of drugs by experiments on animals I have to confess is a very difficult one, because after we have found out what they do in one animal we find that in another the results are wholly

Concerning Dr. Lauder-Brunton, the evidence is less direct, but to my mind it is quite conclusive, and I adhere to my statement that he made "a practical admission." Dr. Lauder-Brunton's name had been introduced specially in the evidence concerning the circulation. After Dr. Acland's evidence not a single contravention of his correction of Dr. Sharpey occurs. Therefore I take it that all the subsequent witnesses agree with him. I might have taken any one or all of twenty-four names, but for a special reason I picked out that of Dr. Brunton. In a letter from Dr. Brunton, read by Mr. Copas in the papers I have quoted (the exact words of which I cannot give as it has not yet been published), Dr. Brunton intimated that he had never held the views concerning Harvey for which I claim his admission; but in his work "*Pharmacology and Therapeutics*" (Macmillan, 1880), pp. 120-121, are the following words: "Harvey *found valves in the veins*, and *therefore* thought it probable that the blood circulated, instead of oscillating backwards and forwards. \* \* \* If the blood circulates, pressure on the veins must make them empty above and full below the point of constriction. \* \* \* The experiment was tried,—the expected result followed, and thus the thoughts of Harvey passed from the region of speculation

different, and the process of investigation has to be repeated in man. Not only so, but in human individuals the actions of drugs in very many cases vary so much, that each fresh patient may form really a new research. Pharmacy forms, therefore, at least, a very shaky argument for vivisection.

Finally, the Editor of *Nature* deals with the argument of proportion, which is stated to the effect that the proportion of pain inflicted by vivisection bears but small ratio to the pain relieved by the discoveries effected in that way. But if this question be examined historically, as it must be for the sake of justness, it will be found that the argument is all the other way. To take the case of Ferrier's experiments, if the history of the point be examined, even from the period of Saucerotte till now, the number of experiments recorded is perfectly awful, and we can easily imagine that many more were performed and not put on record. Concerning the arteries this is still more true; and it is, to say the least of it, very doubtful if any permanent good has been done by them. What we do really know about both of these matters with certainty has been derived from the post-mortem examinations of our failures in human subjects, and not from vivisection experiments.

into that of ascertained fact." Possibly this is quite enough for Dr. Brunton. Harvey worked and wrote early in the seventeenth century, a time when the rights of human beings had but scant consideration, a time when men's thoughts were rough and rude on almost all questions, and when science was in its infancy. We cannot blame Harvey for not being in advance of his time, and for being incapable of a reasoning power which has been granted to those who follow him in the nineteenth century. But we must blame those of our own time who remain wilfully blind to the logical conclusions of the facts given by Harvey himself. When I say, as my general argument, that vivisectional experiments are useless and misleading, I merely say what Harvey himself proves in numerous instances. He did not see the logical conclusions of his facts, but he states the facts clearly enough. The following illustrations I take from his works almost at random. (Willis's Edition, Old Sydenham Society.)

P. 16. Speaking of Galen's most meaningless and utterly useless experiment of dividing the trachea of a living dog, forcibly distending the lungs with a pair of bellows, and then tying the trachea securely, he says: "Who, indeed, doubts



In a work published within the last few weeks by a distinguished member of this Society, Dr. George Gore, entitled "The Scientific Basis of National Progress," and at p. 80, will be found the following sentence: "The Antivivisection movement is but one of the phases of the ever-existing conflict between the advancing and retarding sections of mankind."

I do not know whether I belong to the antivivisection movement or not, but I certainly cannot rank myself with those who attribute to vivisection the merit which distinctly belongs to other causes. So far I am an antivivisectionist most thoroughly.

Similarly I do not know whether or not I am to be regarded as belonging to the "retarding section of mankind." If I am so classed I fear I shall be in company as strange to me as I shall be objectionable to it. But my relief is great as I read further in Dr. Gore's book and see upon what grounds he has built his conclusion. I have never heard that Dr. Gore has conducted any vivisection research himself, and therefore I assumed that he took his argument from some other source. He was kind enough to give me his reference for the following statement, which he makes at page 81: "Ferrier's comparatively

that, did he inflate the lungs of a subject in the dissecting-room, he would instantly see the air making its way by this route, were there actually any passage for it?" In this case Harvey was clearly of opinion that vivisection was useless.

P. 50. "This truth, indeed, presents itself obviously before us when we consider what happens in the dissection of living animals; the great artery need not be divided, but a very small branch only (as Galen even proves in regard to man), to have the whole of the blood in the body, as well that of the veins as of the arteries, drained away in the course of no long time—some half hour or less. Butchers are well aware of the fact, and can bear witness to it; for, cutting the throat of an ox and so dividing the vessels of the neck, in less than a quarter of an hour they have all the vessels bloodless. The same thing also occasionally occurs with great rapidity in performing amputations and removing tumours in the human subject." Here vivisection experiment was therefore wholly unnecessary, but Harvey did not see it.

P. 126. "The internal jugular vein of a live fallow deer having been exposed (many of the nobility and his most serene Majesty the King, my master, being



recent vivisection experiments have already enabled medical men to treat more successfully those formidable diseases, epilepsy and abscess of the brain." His authority is an anonymous article in the *British Medical Journal* of November 19th, 1881, in which a series of cases is given in support of this extraordinary statement. The purport of it is that the experiments of Ferrier have led to greater certainty in applying the trephine for the removal of depressed fractures, &c., which had produced serious symptoms, or for the relief of matter in cerebral abscesses. ♀

I do not propose now to go into this very wide and difficult question, because I shall have a fuller opportunity on another occasion. I shall only say that Ferrier's first experiments were published in 1873, and that previous to that time a large number of cases are on record where the seat of injury was ascertained with perfect accuracy by simpler and less misleading methods—in one case by myself in 1868. The *a priori* difficulties in the application of Ferrier's conclusions are enormous and, as it seems to me, insuperable; and, after a most careful historical consideration of the illustration quoted by Dr. Gore, my verdict is most decidedly that of *not proven*.

present), was divided, but a few drops of blood were observed to escape from the lower orifice rising up from under the clavicle; whilst from the superior orifice of the vein, and coming down from the head, a round torrent of blood gushed forth. You may observe the same fact any day in practising phlebotomy: if with a finger you compress the vein a little below the orifice, the blood is immediately arrested; but, the pressure being removed, forthwith the flow returns as before."

The experiment alluded to here forms, so far as I can discover, the basis of Hannay's well-known picture, which affords the British public the proof of Harvey's claim as the discoverer of the circulation, very much as popular theology is drawn from Milton's "Paradise Lost." But Harvey admits in the last sentence that the experiment was wholly unnecessary.

Again, if we go into Harvey's mistakes we find further proof of the misleading nature of vivisectional research. Thus at p. 103 he says: "I can therefore boldly affirm, that there is neither any anastomosis of the *venae portae* with the cava, of the arteries with the veins," &c., &c. (concerning the liver); and we find his experiments giving conclusions wholly at variance with the facts displayed by the injecting syringe.

The application of the trephine for the treatment of epilepsy is of course absolutely limited to cases where the disease is the result of injury to the skull. No one has ever dreamed of applying it to other cases. I find that the first operation of this kind was performed in 1705, by Guillaume Mauquest de la Motte with partial success, and it was repeated with complete success by Mr. Birch of St. Thomas's Hospital, 1804. Between 1804 and 1865 there are 50 cases on record (collected by Dr. James Russell, *British Medical Journal*, 1865), and of these 44 recovered, the results being satisfactory in 39 of them. This paper of Dr. Russell's was published years before any of Ferrier's experiments were undertaken, and the results of trephining for epilepsy published since are not so good as those published by Dr. Russell. The most recent contribution to the subject is a paper by Mr. J. F. West, who asks the question "Are our indications in any given case, either of paralysis or epilepsy, sufficiently precise and well-marked to warrant us in recommending the use of the trephine at a particular point of the skull?" and he answers it thus: "It will be a long time before it is definitely settled, but such cases as those alluded to give en-

What I said therefore originally on this subject I adhere to; nay, I say more, for I am convinced that the vague and, in many instances, unintelligible descriptions and conclusions of Harvey would have been simpler, clearer, and more correct if he had never made any vivisectional experiments at all.

"Philanthropos" criticises my views about Listerism and carbolic acid. He evidently knows nothing about surgery, or he would know that my views are now, with one exception, adopted by all those who practice my department of the art. The same thing is true about the use of catgut. Let him look at the preparation of a case of subclavian aneurism now in the Hunterian Museum, added to the collection last year, and study the question a little more.

Further, I think I may say without egotism, that my surgical practice is now one of the largest of its kind in the world. I have entirely dispensed with the use of carbolic acid or any other such substance, greatly to the benefit of my patients. Medical visitors come from all parts of the globe to see how it is done, and they go away satisfied that the days of Listerism are numbered.

Let him, or any of our readers, peruse my chapter on the "History of Ovariectomy" (*Diseases of the Ovaries*, 4th edition 1883), and then make a con-

couragement." This answer of a practical surgeon is very different from that of Dr. Gore.

Even if the conclusions which are attributed to Dr. Ferrier's researches were to be regarded as indisputable, my answer would be that they might have been arrived at, and certainly would soon be enormously extended, if our clinical research were conducted upon reasonable and scientific principles. The chief reason of the slow advance of the arts of medicine and surgery is the reckless waste of the material so plentifully supplied by disease, and the first remedy will consist in the sub-division of the labour, a remedy against which, unfortunately, the medical profession protests most vigorously.

It is of course perfectly impossible to deal with all of the illustrations in favour of vivisection which have recently been advanced in the limits of an ordinary paper, and I prefer to take those which deal with points of practical utility, rather than with such as have as yet only a possibility of being useful in the future. I shall deal, therefore, at present chiefly with the illustrations which have been gathered from the field of practical medicine and surgery, for in them, of course, the public see the strongest arguments. If it is publicly announced, as has been done of late very widely, that human diseases have been cured and human suffering lessened by experiments on the lower animals, the public must therein see a strong argument for vivisection. But such announcements are open to the test of his-

trast with the facts there given and the nonsense he writes about Mr. Spencer Wells on page 28 of his "Physiological Cruelty."

Finally, I have to complain that all through his book "Philanthropos" makes charges of ignorance and mendacity against his opponents to which we cannot retaliate unless we know exactly who he is. Particularly he throws doubt on an account given by me of an amputation of the leg of a dog. If "Philanthropos" will reveal himself, I shall then be able to reply to his insinuation. But it is quite impossible to reply to any utterance of this kind on the part of an anonymous writer.

*July 24, 1883.*

L. T.



torical examination, and to this I propose to subject the most important of them. I am equally open to discuss in the same way those points of less apparent usefulness, the matters of mere physiological discovery, on some future occasion, if it should arise; but, as with these the only defence can be that some day they may prove of service, it is clearly best to deal first with those for which an actual and not merely a potential utility is claimed.

Those of my professional brethren who take the other side may probably complain that I have selected a lay audience for the discussion; but the answer is, that by the circulation of pamphlets, and by communicated paragraphs in newspapers, they have already taken the initiative, and I am but meeting them on their own ground.

I am quite well aware that I am one of a small minority of my profession in my view that vivisection is useless as a method of research, but the answer I am disposed to offer on this point is, that not one in a hundred of my professional brethren have ever seriously examined the question. Ninety-nine take for granted the statements of the hundredth, and he, in turn, has not gone into the matter upon that side from which alone a safe answer can be given—that of historical criticism.

The dispute, as I have already said, is not to be settled by mere statement of opinion, one way or the other; nor is it a question of authority. On the argument of authority a very singular answer has been given by the supporters of vivisection in the case of the late Sir William Fergusson, who stated in his evidence before the Royal Commission that in his opinion nothing had been gained for surgery by experiments on the lower animals—an opinion which I entirely endorse. During his lifetime, Sir William Fergusson had heaped upon him all the distinctions which his Queen, his country, and his profession had it in their power to bestow. He was the titular head of

his profession, its most successful operator, one of its greatest anatomists, its most widely employed practitioner, its most successful teacher, the author of its principal text-book on surgery—but now, when he is dead, we are told he was not a scientific surgeon, because he did not believe in vivisection. Nobody said this in his lifetime, and so late as 1873 he was elected President of the British Medical Association, over all the profoundly scientific surgeons of the Metropolis. I share Sir William's opinions concerning vivisection, and I am quite content to rank with him on that account as an unscientific surgeon.

A pamphlet has recently been published in this town on "The Influence of Vivisection on Human Surgery," by Mr. Samson Gamgee, in which the proposition is set forth that without experiments on living animals "scientific surgery could not have been founded, and its present humane and safe practice would have been impossible." Mr. Gamgee supports this proposition by a series of instances which we may presume are the best and strongest he could find. These I tabulate as follows, and I shall discuss them historically in this order.

- I. Treatment of injuries of the head, and the theory of Contre-coup.
- II. Amputation of the Hip-joint.
- III. Paracentesis Thoracis.
- IV. Sub-cutaneous Tenotomy.
- V. Treatment of Aneurism, Ligature, and Torsion of Arteries.
- VI. Transfusion.
- VII. Abdominal Surgery.
- VIII. Function of periosteum.
- IX. The Ecraseur.
- X. Detection of Poison.

Mr. Gamgee tells us that the Académie de Chirurgie gave

out the subject of contre-coup, and its influence in injuries of the head, as the subject for a prize competition, and that the prize was obtained in 1778 by M. Saucerotte, whose essay was based "on literary research, clinical observations, and twenty-one experiments on living dogs." \* He omits, however, to make any estimate of the value of the experiments on the dogs, which seems to me to be absolutely nothing; and he quite forgets to mention that the theory of contre-coup had been completely established for nearly two centuries before, and had been particularly the subject of Paul Ammannus of Leipsic, who wrote a well-known work, "*De resonitu seu contra fissura cranii*," in 1674, in which trepanning is recommended at the point of contre-coup, as had been practised by Paul Barbette, of Amsterdam, thirteen years before that. The theory of contre-coup, and the fatal practises arising from it, are happily now buried in oblivion, in spite of Saucerotte's vivisection, and would never again have been alluded to but for Mr. Gamgee's unfortunate resurrection of them.

The modern verdict concerning fractures of the skull is given tersely in Mr. Flint South's words, "the less done as regards meddling with them the better," and "a knowledge of counter-fractures is quite uncertain." In fact nothing could be more unfortunate than the selection of M. Saucerotte's experiments as an illustration of the value of vivisection, for they were performed for a purpose which was long ago recognised as futile, and in support of a practice universally condemned.

M. Saucerotte says—"Pour établir le diagnostic des lésions des différentes parties du viscère, j'ai cru devoir prendre la voie de l'expérience et de l'observation. Ce ne sont point ici des conséquences hasardées, ce sont les resultats de faits pénible, que formeront, á ce que j'espère, un foyer lumineux, dont les

\* *Mémoire sur les Contre-coups dans les Lésions de la Tête*, par M. Saucerotte (Couronné en 1768), *Mem. Acad. de Chirurgie*, tom. x. p. 327, *et seq.*



rayons répondront le plus grand jour sur la pratique." He anticipated many of Ferrier's experiments by more than a hundred years, and when he trephined the skulls of dogs and injured their brains on the right side, he found that they became somewhat feeble on their left sides, and *vice versa*, a fact that had been established by pathology long before. His idea of imitating the injury of contre-coup, was to pass a knife right through the substance of the brain, till it impinged on the inner surface of the skull opposite the trephine hole, a most absurd experiment, as the contre-coup injures at the opposite surface only, and not necessarily at all the intervening brain substance.

Reading his experiments, they seem so like Ferrier's that I fancy if Dr. Ferrier had known of the existence of this essay he would have found little need to repeat its work.

Many of the conclusions of Saucerotte's experiments are eminently absurd, and, save that of the decussation of the fibres, which was known before, I can find few that have been since accepted, and those that have been he candidly avows were previously observed in cases of disease. Finally, the conclusions concerning treatment of injuries of the head which he draws from his experiments are not such as would be listened to in modern surgery, and it is certain that if they were ever acted upon they must have had results almost uniformly disastrous.

The fact is, that the whole run of vivisectional experiments on the brains of animal, now extending over hundreds of years, have given no sort of assistance to the elucidation of the physiology of that wonderful organ, so contradictory have been the results. On this subject Dr. W. B. Carpenter, who curiously enough has recently appeared as an ardent supporter of vivisection, says, in the seventh edition of his standard work on the "Principles of Human Physiology," p. 645, "The results of partial mutilations are usually in the first instance a general disturbance of the cerebral functions; which subsequently, how-

ever, more or less quickly subsides, leaving but little apparent affection of the animal functions, except muscular weakness. The whole of one hemisphere has been removed in this way, without any evident consequence, save a temporary feebleness of the limbs on the opposite side of the body, and what was supposed to be a deficiency of sight through the opposite eye.

\* \* \* So far as any inferences can be safely drawn from them these experiments fully bear out the conclusion that the cerebrum is the organ of Intelligence," a conclusion which surely has never been doubted, since it was first the object of the then savage club to destroy the intelligence of a foe by cracking his skull. Continuing his researches on such experiments as those of Saucerotte and Ferrier, Dr. Carpenter tersely sums up the *prima facie* objections to them, objections which seem to him, as they seem to me, to be fatal to their utility: "It is obvious that much of the disturbance of the sensorial powers which is occasioned by this operation is fairly attributable to the laying open of the cranial cavity, to the disturbance of the normal vascular pressure, and to the injury necessarily done to the parts which are left by their severance from the cerebellum." Dr. Marshall Hall also pointed out long ago that injury to the-dura-mater is an important factor in the results obtained.

## II.—AMPUTATION OF THE HIP JOINT.

At page 8 of his pamphlet, Mr. Gamgee makes the astonishing statement that this operation was only attempted after it was proved safe by vivisection. The authority he has been kind enough to give me for this is a brief sentence in the preface to the ninth volume of the "*Mémoires de l'Académie de Chirurgie*," written by the Secretary General and published in 1778.

But the first hint we get of amputation of the hip-joint is from a German surgeon named Vohler, who was in practice

about 1690. It is doubtful if he ever performed it on a living patient, but it is on record that he tried on the dead body. But it was performed by M. la Croix, of Orleans, in 1748, not only on one limb, but on both limbs of the same patient, the first operation being successful, and the second almost so. This was nearly thirty years before the publication of the vivisection of dogs; and there are many other cases of success previous to Mr. Gamgee's alleged origin of the operation, one being by the celebrated Ker of Northampton, in 1773; and, as Mr. Gamgee has published a large book on amputation of the hip-joint, it is surprising that he did not know something more about the history of the operation.

### III.—PARACENTESIS THORACIS.

Mr. Gamgee makes another most unfortunate selection in the case of William Hewson, who based a theoretical operation for pneumothorax upon experiments on living dogs and rabbits so long ago as 1769. He made a wound in the side of the chest and admitted air into the pleura, where no air ought to be, and then he operated to get it out again. When such a condition is brought about in man, and no vital organ seriously injured, the patient gets perfectly well without any operation. I cannot learn that Hewson's operation for the removal of air has ever been performed on man. When pneumothorax occurs from disease it is generally associated with conditions necessarily fatal, for which no operation is advisable. On this point the greatest authority, Dr. Bowditch of New York, says, "I have operated once in pneumo-hydrothorax, with temporary relief and comparative ease for several days. Many theoretical objections may be urged against the operation in such a case; but as the operation can do no harm and may give much relief, I shall operate again in such a case." The proceeding is therefore doubtful, the conditions



are extremely rare, pure pneumothorax, such as Hewson invented his proceedings for, never needs it, and therefore his experiments on living dogs and rabbits were useless.

Finally, tapping for the removal of fluid in the chest was practised long before Hewson's time, and therefore his research was needless. Hewson really based his proposal on this well-known practice, but in this he was anticipated in the most favourable cases—those of wounds—for Anel, of Amsterdam, published quite the same proposal in 1707, and it has been uniformly condemned by every writer on military surgery since, because the removal of the air merely induces bleeding.\* Anel devised a syringe for the purpose, which has been revived as the modern aspirator.† Had Mr. Gamgee known anything of Dominic Anel he would never have mentioned William Hewson.

#### IV.—SUBCUTANEOUS TENOTOMY.

I have traced the history of the surgery of tendons, and I cannot see the slightest reason to attribute any of the advances in this department to the alleged vivisections of John Hunter. I cannot find any record of these experiments, beyond the allusions to them by Drewry Ottley, and Palmer in his life of Hunter.

The same accident which happened to Hunter in 1767 happened to the first Monro in 1726, and from the latter instance a very marked advance in surgical practice was at once made and a contrivance invented by Monro himself, for his own case is still in use and goes by his name. No such advance was made from Hunter's accident or from his vivisections. In their histories of the progress of orthopædic surgery Little and Adams make no such claim for Hunter. Adams points out clearly, and with justice, that Hunter established the principles on which subcu-

\* Flint South's edition of Chelms, vol. i. p. 452.

† *L'Art de Sucrer les Plaies sans le servir de la bouche d'un homme.* Amsterdam, 1707.

taneous surgery is now conducted; but these he established from clinical observations, not from experiments upon animals. And in his lecture on "Ruptural Tendons" (vol. i. p. 436), Hunter says not one word about his vivisections, or any conclusions he derived from them as to the method of repair of tendons. If he ever made any such experiments he must have placed very little value upon them.

If we trace the development of tenotomy we find that Hunter's experiments had no influence upon it at all. They were performed, it is said, in 1767. But the first tenotomy was not performed till 1784, by Lorenz, at Frankfort, and then the conditions were absolutely in defiance of the principles of subcutaneous surgery. It was done by an open wound, and this practice was continued with hardly any modification till far on in this century. In fact, as Adams points out, it is from 1831 that the commencement of scientific tenotomy dates, at the hands of Stromeyer. If this is so, and Adams makes his case out most conclusively (*Club-Foot*, 1873), how utterly useless Hunter's experiments on dogs must have been, to lie forgotten and unnoticed till unearthed in Mr. Gamgee's pamphlet of 1882, one hundred and fifteen years after they were performed; or how singularly careless and inattentive to the teachings of vivisection the medical profession must be, that they should allow this immense discovery to lie neglected from 1767 till 1831.

To bring forward so rash an illustration as this for the value of vivisection is to cast a terrible slur at the profession of surgery, a slur which I do not think at all deserved if the true history of such advances is carefully investigated, and the moving causes of them properly credited.

#### V.—TREATMENT OF ANEURISM, LIGATURE, AND TORSION OF ARTERIES.

Mr. Gamgee alludes to the oft-quoted story of the Hunterian

operation for aneurism as a proof of the aid vivisection has given to surgery. This illustration has been so completely and so often destroyed, that it is absolutely unnecessary to allude to it further than to explain that Hunter modified Anel's operation merely because he found the artery near to the seat of disease would not hold the ligature, and the patients bled to death. As the arteries of animals never suffer from the disease in question experiments upon them could not have helped Hunter in any way whatever. Sir James Paget, who has lately appeared as an ardent advocate for vivisection, and, therefore, may be appealed to by me as a witness not biassed to my view, has recorded his opinion in the Hunterian oration given at the College of Surgeons in 1877, that Hunter's improvement in the treatment of aneurism "was not the result of any laborious physiological induction; it was mainly derived from facts very cautiously observed in the wards and deadhouse." In this opinion Sir James Paget is undoubtedly correct.

Concerning the tying and torsion of arteries I am in a position to speak with some authority, because I have myself performed experiments on living animals, and have found how futile they are, and how uncertain and untrustworthy are their results. Mr. Gamgee tells us that some local worthies, who were distinguished by early performances of serious operations, practised their 'prentice hands on living animals. This is not scientific experimentation, but culpable and wholly unnecessary cruelty. It is on the dissecting table that a surgeon prepares his hand for his work, and not on the bodies of living animals. I have never known nor heard of such an instance before, and I trust there are no more to be quoted. Any surgeon who did this now would, I am sure, receive a universal condemnation from his professional brethren.

Mr. Gamgee quotes Jones's experiments on the arteries of animals as an instance of a valuable contribution to surgical



progress by experiments on animals, and I do not think any more complete illustration could be quoted in support of the uselessness of vivisection as a method of scientific research than that of the history of the physiological and pathological processes to be observed in arteries. If we consider the question from what some would call the purely scientific side, that is apart altogether from any practical bearings it may have for the relief of human sufferings and the cure of human disease, it consists merely of a mass of observations in which each observer contradicts some other. Upon this subject I wrote as follows so long ago as 1865 :—

“ John Hunter warned surgeons to avoid injuring any of the coats of an artery, and to this effect advised that the ligature should not be drawn so tight as to cut them; while many of his contemporaries and successors dreaded any injuries so much that they used all sorts of clumsy contrivances to avoid it—such as pads of lint and bits of cork inserted between the arteries and ligature. Again, Travers, in his experiments on ligatures of arteries, demonstrated that Jones was quite wrong when he insisted that it was necessary to divide the inner coats; and Mr. Dalrymple, of Norwich, proved by his experiments that while simple and continued contact of the parietes of a vessel, without the slightest wound of any of the coats, was sufficient to produce permanent adhesion and obliteration, yet that division of the internal and middle coats without continued coaptation invariably failed to produce adhesion. Hodgson says that he cannot substantiate Jones’s statement that division of the coats is essential, and strongly supports the opinion that coaptation of the walls, without rupture of any of the coats, will produce occlusion. The theories of Dr. Jones were strongly supported by Professor Thompson, his teacher, but were strongly opposed by Sir Phillip Crampton, who insisted that the division of the coats not only was unnecessary, but that it frequently defeats its own object.”  
—(*Medical Times and Gazette*, 1865.)

I quote this at length to show that fifteen years ago I found authorities differing so much on this scientific question that I thought it advisable to institute a new series of vivisectional ex-

periments to decide it. The experiments performed by myself only added to the confusion, though nobody saw that at the time. What we were working at was to get quit of the ligature altogether, and to secure arteries by a temporary compression of some kind without injuring the coats. Acupressure promised to accomplish this; but it failed, for reasons I need not enter into here. The desire to get quit of the ligature was due to the fact that after a vessel was tied one end of the ligature was cut off and the other left hanging out of the wound, where it remained for weeks, sometimes for months, and occasionally (as in Lord Nelson's case) for years.

The amazing thing is that with all the experiments made upon animals nobody ever thought of cutting both ends of the ligature quite short and closing the wound over it. As a matter of fact, from the time of Ambrose Parè to that of Simpson, an interval of over 300 years, we went bungling on with experiments on animals when the whole thing lay clear before us. It was the successful experiments of Baker Brown and Thomas Keith upon women suffering from ovarian tumours which showed us that if we use pure silk, cut the ends of the ligature short, and close the wound carefully over them, success will be certain. Yet, not content with this, we hear of fresh experiments on animals with carbolised catgut, chromicised catgut, kangaroo tendons and other novelties, which speedily die out when applied to human beings.

In the case of the arteries, therefore, experimentation on animals has proved to be "science, falsely so-called." What we have done in this direction is entirely the result of clinical experience, and that only.

## VI.—TRANSFUSION.

This operation was not initiated, as asserted by Mr. Gamgee, in the second half of the seventeenth century by Dr. Lower, of

Oxford, nor was it first proposed as a legitimate surgical operation at all. It was proposed, and in all probability was really practised, by the alchemists of the sixteenth century as an attempt to obtain for the wealthy aged a renewal of their lease of life, after the theory and legend of Faustus. Certain it is that allusions to it are frequent, though the first actual account of its performance is given by André Libavius, Professor of Medicine at Halle (Helmst. 1602), as having been performed by him in 1594, the blood of a young healthy man being transfused into a man aged and decrepit, but able and willing to pay for the supposed advantage. In the early part of the seventeenth century it was a good deal discussed from this point of view, forgotten for a while, and then after the Restoration it was reconsidered, and a great deal written about it in this country and on the Continent. An extremely interesting allusion to the experiments is to be found in the wonderful Diary of Samuel Pepys:—

“November 14th, 1666.—Dr. Croone told me, that at the Meeting at Gresham College to-night (which, it seems, they now have every Wednesday again) there was a pretty experiment of the blood of one dog let out (till he died) into the body of another on one side, while all his own run out on the other side. The first died upon the place, and the other is very well, and likely to do well. This did give occasion to many pretty wishes, as of the blood of a Quaker to be let into an Archbishop, and such like ; but, as Dr. Croone says, may, if it takes, be of mighty use to man’s health, for the amending of bad blood by borrowing from a better body.

“16th.—This noon I met with Mr. Hooke, and he tells me the dog which was filled with another dog’s blood at the College the other day is very well, and like to be so as ever, and doubt not it’s being found of great use to men, and so does Dr. Whistler, who dined with us at the Tavern.”

The scheme of transfusion in all the experiments of the seventeenth-century descriptions of which I have seen was to take arterial blood from an animal and pass it into the veins of another,



and that this was successful is not surprising. But this has never been attempted in modern times upon man. It certainly would not be justifiable; because, to interfere with a large artery—and a large artery would be required—in a man is always an extremely risky thing. Dr. Lower, who is Mr. Gamgee's authority, in 1667 injected or tried to inject arterial blood from a lamb into a man, but the operation was so badly done that I do not believe any blood really passed. If Pepys' idea could have been carried out, of transferring some of the peaceful blood from the arteries of a member of the Society of Friends, for the replacement of the turbulent and brutal spirit of Archbishop Laud, some good might have been done, much of the terrible history of that time need not have been written, and I might not have appeared here as a critic of such experiments. But no such or any other good result was obtained. A large army of experimenters rushed into the field, a fierce controversy took place; but before the eighteenth century dawned the whole thing was discredited and forgotten. Mr. Flint South gives a succinct history of the matter, and tells us that it was revived by the plan of mediate transfusion in the early part of the present century. The former experiments were fruitlessly repeated and others tried. The result is that the operation has a very insecure hold on professional opinion. I have seen it performed seven times without success in a single instance. I have twice been asked to do it, and have declined, and both patients are now alive and well. We hear a great deal of cases in which patients have survived after transfusion has been performed, but we hear little or nothing of its failures. Personally, I have no confidence in the proceeding.

## VII.—ABDOMINAL SURGERY.

Mr. Gamgee alludes to a vivisection experiment made by John Shipton, and published in 1703, as having laid the

foundation for the recent advances of abdominal surgery, which are attracting the admiration of the whole professional world, and the instances he quotes date so late as 1880. If Shipton's experiment has been so fertile, why has the crop been delayed for one hundred and seventy-seven years?

But even here Mr. Gamgee is wrong in his history. The whole progress of abdominal surgery dates from the first successful case of ovariectomy performed by Robert Houston in 1701. Failing to see the lesson taught by this, and led astray by vivisection, no further success was achieved till 1809, by Ephraim McDowell, and it was not till 1867 that any substantial gain was made. Disregarding all the conclusions of experiment, Baker Brown showed us how to bring our mortality of ovariectomy down to 10 per cent.; and again, in 1876, Keith proved that it might be still further reduced. The methods of this reduction were such as only experience on human patients could indicate; experiments on animals could and did teach nothing, for operations have been performed on thousands of animals every year for centuries, and nothing whatever has been learnt from this wholesale vivisection.

As soon as Keith's results were established abdominal surgery advanced so rapidly that now, only six years after, there is not a single organ in the abdomen that has not had numerous operations performed upon it successfully. I have had, as is well known, some share in this advance, and I say, without hesitation, that I have been led astray again and again by the published results of experiments on animals, and I have had to discard them entirely.

Speaking of some recent attempts which have been made to operate on cases of cancer of the stomach, Mr. Gamgee says: "Warranting, as such cases do, the placing of cancer of the stomach amongst diseases curable by the knife, do they not also justify the vivisection of dogs by Shipton and Travers, who, by

their experiments, laid the first scientific foundation of intra-abdominal surgery?" Such a statement as this must be so completely qualified as to be regarded as altogether inaccurate. No form of cancer is yet known ever to have been cured, either by operation or anything else. If removed it invariably returns, and in all these cases of cancer of the stomach quoted by Mr. Gamgee, save one, the disease speedily returned and killed the patients. The one exception has not yet been under trial long enough to enable us to give an opinion. Doubtless it will have the same end as the others.

#### VIII.—FUNCTION OF PERIOSTEUM.

The history of the development of our knowledge of the formation and growth of bone is extremely interesting, because it shows how completely misleading are the conclusions based upon vivisectional experiments, and how perfectly the secrets of Nature may be unravelled by a careful and intelligent examination of her own experiments. No one can look now at a necrosed bone without seeing how completely the whole story is there written. The history also exemplifies the fact that it is not only the purely practical details of surgery which are independent of vivisection for their development, but what are called the more scientific developments of physiological knowledge are equally possible without its aid, and are often retarded by its misguidance.

The first real observer in this department was Jean Guichard Duverney, born in 1648, who achieved such distinction that Peyer, in a dedicatory epistle, says to him, "*Sempiterna te (Duverneyum) quondam trophœa manebunt et Regi vestro, Academiæ Urbique gloriosum erit tantum aluisse civem.*" He studied closely, and wrote a great deal about the anatomy, physiology, and surgery of bones, and in his books\* he fully

\* *Traité des Maladies des Os*, 1751, Paris. *Œuvres Anatomiques*, Paris, 1761.



describes the method of growth and ossification of bone, its dependence for its nutrition and growth upon the periosteum; the only thing he lacks is the microscopical knowledge of modern times. He also performed vivisections, not upon the periosteum but on the medulla, and they led him into most erroneous conclusions. He cut through the thigh bone of a living animal, and repeatedly plunged a stilette into the medulla, and the animal gave evidence of great suffering. The marrow, he therefore concluded, received a great number of nerves, which passed through the canals in the bone, but which existed only in his imagination. As long as he kept to his clinical observations and anatomical dissections he reached exact conclusions, but as soon as he entered the arena of vivisection he went all astray.

The next author of note was Francois Hunauld, born in 1701, who published in 1730 "*Recherches Anatomique sur les Os du crâne de l'homme*," in which he describes with the utmost accuracy the ossification by the membranes, between which the cranial bones are developed. The only errors he made were hypothetical descriptions of things he could not have seen without a microscope, and that he evidently had not used.

Next comes Robert Nesbit, a Scotch surgeon, settled in London, who published in 1736 an essay, entitled "*Human Osteogeny*," explained in two lectures."

He was the first to demonstrate the construction of bone by the now familiar experiment of dissolving out the mineral matter, and leaving, as he most accurately says, a spongy substance altogether different from cartilage. Cartilage he referred to its proper function; but he describes it as vascular, in this showing the want of microscopical investigation; but concerning the process of ossification he had got quite as far as we have at the present day. He tells us that in the blood, or in a liquid separated from it, there is an ossifying fluid, a fluid containing the material out of which bone is built up, composed of parts which

are not sensible: that whenever Nature determines upon an ossification within a membrane, from which all bones are developed, or in a cartilage, she directs by some means, the nature of which we are ignorant of, a larger quantity of blood to the vessels of the membranes, so that they become distended and visible, whereas before they were invisible. He describes the process of ossification only with such errors as are due to the absence of the microscope, and says: "Thus the membranes (periosteum) and the cartilages are the reservoirs in which the osseous particles are deposited and moulded." He denied the existence (and quite correctly) of an internal periosteum which had become about that time a matter of great contention.

The celebrated discovery of the property of madder for staining growing bone, when used as food by animals, was published by John Belchier in the Philosophical Transactions for 1736, and he fully disclosed thereby the method of growth of bone from periosteum, and many other most interesting and valuable discoveries concerning bone.

Between 1739 and 1743 Henri Louis Duhamel-Dumonceau published eight memoirs on the growth and repair of bones, largely based on the suggestive discovery of Belchier. Up to this time the formation of callus was thought to be due to an effusion of osseous juice—a belief which pervaded the surgical teaching of a distinguished professor of the University of Edinburgh so late as my own student days—but Duhamel proved its real origin. He also completely established the fact that bones grow in thickness by the addition of osseous layers originating from the periosteum.

Duhamel performed many vivisections, but it is quite clear from his own descriptions that they were failures and did not help him. He says himself that his conclusions were based on sections which he made of specimens of fractures which were in the collections of Winslow, Moraud, and Hunauld. In fact, to

any intelligent observer who looks at a preparation of necrosis it is evident that no vivisection was needed to show the whole process and growth of repairs of bone ; and, even if vivisection were necessary, history displays with certainty that Syme and Ollier, to whom Mr. Gamgee attributes the merit of these discoveries, were only uselessly repeating the attempts of Duhamel more than a century old, and were only attempting to establish what had long before been proved.

Since Duhamel's time thousands upon thousands of experiments upon animals are on record, some to prove that the periosteum has nothing whatever to do with the formation of bone or with the production of callus, and others to prove that we owe everything to the periosteum, and yet it has been settled absolutely only by the experiments of disease upon our own bodies, and not by experiments on animals. It would be really amusing to read the account of the researches of Sue, Bordenave, Delius, Dethleef, Fongerox, Haller, and countless others, were not the humour of their mutual contradictions sadly marred by the accounts of the tortures they inflicted uselessly on myriads of animals.

The experiments of Dethleef of Göttingen in 1752 were far more scientific than those of Mr. Syme in 1837, and the conclusions of both seem to me to be equally erroneous. At any rate Mr. Syme did not help us one bit in advance of Duhamel and Fongerox. Haller made numerous vivisectional experiments, and he was the most distinguished physiologist of his time, yet he records his conclusion that the periosteum has nothing whatever to do with the formation of bone, and as a proof of this he quotes the formation of exostoses on teeth. The fact is, that as long as dependence was placed on vivisection, so long did one experimenter investigate after another fruitlessly, and with conclusions absolutely contradictory. On pathological research alone has the true conclusion been established. Haller made a



long series of vivisectional experiments, published in two memoirs,\* and triumphantly proved that the periosteum can have nothing to do with the formation of bone. He concluded from his vast array of experiments that bone grew from the middle and not from the outside, together with many other absurdities, only to be matched in the modern researches of Bennett and Rutherford on the function of the liver, also based on fallacious vivisections.

The whole of the physiology and pathology of bone have been laid bare by the accident of the pigs of the dyer with whom Belchier dined, by microscopic research, and the observations of disease. Yet Hunter and Stanley thought it necessary to confirm the conclusions of the madder stain by such a clumsy device as fixing a ring of metal round the growing bones of a young animal, letting the ring remain for months or years, and then examining to find—what? absolutely nothing, save that the ring had been more or less covered, just as it would have been on a tree, thus only repeating Duhamel's conclusions. Other observers bored holes in bones and filled them with metal plugs and shot to find only that the conclusions of disease, that long bones grow from the epiphyses, is absolutely correct. Then we come to Mr. Syme's paper in 1837, "On the power of the periosteum to produce new bone." Mr. Syme almost every week was in the habit of cutting through great thicknesses of new bone attached to and growing from the periosteum to get at dead old bone from which the periosteum had been separated; and the new bone, being between the periosteum and the old bone, must of necessity have grown from the periosteum: there was nothing else it could grow from. Therefore, if Mr. Syme found it necessary to cut up animals to find out what was constantly staring him in the face, he was a profoundly unscientific surgeon, whose researches were as badly conducted as they were useless.

\* *Sur la Formation des Os, Lausanne, 1758.*

When Mr. Gamgee read his paper at the local Medical Society and quoted these experiments of Mr. Syme, I said that, as far as I could recollect, the fact was that their conclusions had been absolutely upset by Mr. Goodsir, who did not make experiments upon animals, but followed a far more scientific method of research—microscopic examination. On refreshing my memory I find this is the case. In a paper read before the Royal Society of Edinburgh\* in answer to Mr. Syme, Mr. Goodsir shows that Mr. Syme's method of research was so bad that the experiments could not be performed accurately. Mr. Syme was pre-eminently an unscientific surgeon, for he knew nothing of the microscope; in fact it may be doubted if he ever looked through one. Mr. Goodsir, on the contrary, may be looked upon as the father of modern histological research. He proves conclusively that Mr. Syme's experiments were absurd in their conception and futile in their application. Mr. Goodsir's conclusions are, on the contrary, uniformly accepted, and as to his method he says that they were made upon shafts of human bones which had died,—museum specimens, just as Duhamel's were. They showed that whilst the periosteum is the matrix and machine by which the new bone is made, the real agency is in the layer of osteal cells, and so he finally solved the riddle. He did this by microscopic and pathological research. He condemned the employment of vivisection as useless and misleading, and to him we owe the completion of Belcher's and Duhamel's research—a completion which was hindered for a century by the blunders of vivisectionists.

After this I need not stop to discuss the useless repetition of Mr. Syme's experiments, with variations by Ollier of Lyons, for that would be merely a waste of time.

#### IX.—THE ECRASEUR.

Mr. Gamgee quotes the introduction of the ecraseur as an instance of the influence of vivisection on the progress of human

\* Trans. Roy. Soc. Edin., vol. xiv.

surgery. No more unfortunate instance could be quoted. The principle of the instrument is that it crushes and tears the tissues instead of cutting them as by the knife. The surgical aphorism that "torn arteries don't bleed" was in existence long before M. Chassaignac was born, and if he had based his employment on that alone he could have done all that his instrument has effected. But unfortunately he performed experiments upon animals, and immediately he was led astray. I once saw the leg of a favourite dog amputated at the hip-joint on account of disease, and when the limb was removed not a single vessel bled, and the main artery was tied only as a matter of precaution. In the human subject I have seen twelve or fifteen arteries tied in the same operation, for with us the smallest arteries bleed and require to be secured. Our arteries act in ways altogether different from those seen in the lower animals. Their pathology and physiology are absolutely different, as may be seen in the frequency of apoplexy and aneurism with us, and the almost complete immunity from them of all the lower animals, even in extreme old age. Hunter tried his best to induce aneurism to the lower animals, and failed. Injuries to arteries in the lower animals are repaired with the utmost certainty and readiness, but in man it is altogether different. It may be easily imagined, therefore, that M. Chassaignac's application of the ecraseur to the lower animals was found wholly misleading when man was the subject, and now in human surgery its utility is extremely limited; that is, it is entirely confined to operations where only very small arteries are divided. Speaking for my own practice, I may say that it might be dispensed with and never missed.

Mr. Gamgee's quotation of its application to the ovarian arteries of the cow is peculiarly unfortunate, seeing that when it was used for the same purpose in the human subject it had speedily to be given up on account of its failure.



## X.—DETECTION OF POISON.

A great deal has been made of the successful experiments recently performed by the medical experts for the conviction of Lamson, for that worst of all crimes, the most unpardonable, murder by poisoning. At first sight this does seem a case in which experiments upon animals may be justified. Certainly anything and everything ought to be done to convict a poisoner, and if nothing short of that would do, I would advocate the performance of a hecatomb rather than that such a scoundrel as Lamson should escape. So late as a few weeks ago I made a reservation on this point in my condemnation of vivisection as a method of research, but it seems to me, from a closer consideration of the facts of the case, that it forms really a very strong argument for the complete abolition of vivisection, and, at the same time, unfortunately it is a matter of grave reproach to modern science.

Fortunately the conviction of a poisoner is almost certain. If he is not a doctor he commits the crime so clumsily that he cannot escape. If he is a doctor he must have an interest in the victim's death, is almost certain to be in pecuniary difficulties, and is sure to have had a bad character previous to his great crime. The only difficulty lies in the proof of the presence of the poison. With all poisons but the alkaloids this is a matter of such ease that failure is impossible, and as the alkaloids are almost exclusively in the hands of chemists and doctors the limitation of their use is very close.

The most notorious case in which an alkaloid was used, or supposed to have been used, by a poisoner was that of Parsons Cook. The alkaloid was supposed to be strychnine, and I say supposed, because I rise from the perusal of that trial with much doubt as to whether Parsons Cook really died of strychnine poisoning. Certainly I cannot accept it as proved, and I think

if the trial were to occur now the same evidence which convicted Palmer would probably break down. I am perfectly satisfied, however, that Palmer received substantial justice.

In Palmer's case the principal witnesses for the prosecution were the late Dr. Alfred Swayne Taylor, and the late Sir Robert Christison, certainly the greatest toxicologists of this century. Strychnine was not discovered in the body of Cook, and Dr. Taylor had to admit that the best tests then known were insufficient to discover one fiftieth of a grain, and that even half a grain might remain undetected amongst food in the stomach. Palmer was sentenced to death upon the 27th of May, 1856, and in July of the same year a method of chemical analysis was published by Copney in the "Pharmaceutical Journal," by which one five hundred thousandth of a grain of strychnine could be detected with certainty after separation. In his evidence Dr. Taylor admitted that the experiments he had performed upon animals with strychnine were practically worthless for any application to man, and in the report of the Royal Commission of 1876 he condemned such experiments, particularly those which are directed towards the discovery of an antidote to snake bite.

Strychnine was discovered in 1818, and was first used as a poison in 1831, and again in the case of Mrs. Sergison Smith in 1847, and it was no new matter the toxicologist had to do with in the trial of Palmer. It must be regarded, therefore, as a matter for deep regret that it was not till after the trial and execution of Palmer that the chemistry of strychnine was exhaustively examined, and definite and certain tests for it obtained. At the trial there was a sort of competition among the vivisectionists, and Serjeant Shee actually urged as an argument for the defence that his witnesses had performed ten times more experiments to prove that there was no strychnine, than the witnesses for the prosecution had performed to prove what never was proved, that strychnine was used at all. Yet in two months

chemical processes were devised, without the slightest aid from vivisection, which detected half-a-millionth of a grain with certainty.

At the trial Professor Christison said that another alkaloid was known, of a deadly poisonous character, which it was impossible to detect, but under the judge's direction he refused to make its name known. There were really many alkaloids of a deadly poisonous character at that time quite well known, and aconitine was one. The first case to bring this poison under notice as a criminal agent was in 1841, and the notorious Prichard destroyed his victims with it in 1865. Dr. Penny of Glasgow resorted to experiments on animals in order to bring the crime home to Prichard, and succeeded. Yet I have looked in vain for any record of a research for a method which will detect aconitine with certainty by chemical analysis, as strychnine can be detected, and Dr. Stephenson admitted in evidence that there was no such test.

I daresay such a method will be shortly published, and what I desire to point out is that this discovery ought to have been made long ago in the interest of public safety, not only with regard to aconitine, but with regard to many other alkaloids which may be used in the same way, and which cannot be discriminated from aconitine, even by experiments on animals. At present, when need arises, we must go back to the uncertain method of experimenting upon animals. But this is not science, if by that word we are to speak of exact knowledge. The very weakness of this method has led to a serious infraction of the principles of our judicial proceedings, for the Home Secretary announced in the House of Commons only a few nights ago that the Government, in a case such as Lamson's, could not allow the proceedings of the medical experts for the prosecution to be watched by other experts on behalf of the defence.

This is altogether unfair, for with such an uncertain and



inconclusive method as that of experimentation on animals two men, even if appointed by the Colleges of Physicians and Surgeons, and not by the Treasury, may be mistaken, whereas by chemical or spectroscopic analysis mistakes are extremely unlikely, and the more observers there are the better.

The general conclusion therefore is, that for such purposes experiments on animals should be entirely prohibited, and that an exhaustive research should at once be undertaken at the expense of the State, upon the spectrum and chemical analysis of all substances which may be used for criminal purposes. There is no known substance of constant character which has resisted the chemists' effort to identify it when it has been properly investigated.

If all these alkaloids had been subjected to an exhaustive investigation as strychnine was after Palmer's trial, there would have been no need to revert to vivisection in order to convict Lamson, and I do not think it would now be contended as necessary for the detection of a poisonous dose of strychnine that experiments on animals should be made. Vivisection in this case is therefore not the weapon of science, but is the refuge of incomplete work.

I have now gone over all the points urged in favour of vivisection as contributory to surgical advance as given in Mr. Gamgee's pamphlet, and with the result, to my mind, of proving that in every instance the claim is groundless. Had I time at my disposal I could examine in detail numerous other claims equally fallacious. So far, indeed, as I have already said, I have not met with a single case capable of substantiation, not even the most recent—that of Pasteur's discovery of the prevention of zymotic diseases in domesticated animals by inoculation of cultivated virus.

In the *Nineteenth Century* for March will be found an article by a well-known veterinary surgeon, Mr. Fleming, on this

subject. He describes the ravages of such diseases as anthrax, splenic fever, rinderpest, swine plague, &c., amongst the animals which form our food supply, and I admit the accuracy of his statements. Quite recently Mr. Pasteur has discovered, and his statements have been amply confirmed, that the specific organisms which form the poisons of these diseases may be so artificially cultivated as to be capable of producing by inoculation a mild form of the original disease, which mild form is largely protective from the severe and fatal form of the same malady. In fact there is a perfect analogy between this discovery of Pasteur and that of Jenner.

The argument is that by their inoculation the zymotics of domestic animals may be stamped out, and the claim is that it is a great advance brought about by vivisection. But on a little examination it seems to me that both argument and claim break completely down. If it is really an advance from vivisection, then those who benefit are the animals experimented upon, and that may be legitimate enough—they at least would share largely in the benefit.

But the case must be examined from another side. There are some twenty zymotics amongst our domestic animals to be provided against. Are we to have each of them inoculated some ten or twelve different times, each time for a different disease? The affirmative reply possesses a strong pecuniary interest for a veterinary surgeon, but a practical man will only smile at it.

But, to go deeper into the question, we find another and a much stronger objection. Such a process as protective inoculation must always be an inefficient and a temporary measure. To take the case of vaccination and small-pox, it is beyond dispute that vaccination protects the individual to a large extent from small-pox, but it does not protect the community—as may be seen from the ravages it is making at the present time in neighbouring towns and counties. The machinery of vaccination

never can be so perfect as to stamp out the disease, and it must be regarded purely as a temporary expedient. The real agent for the stamping-out of small-pox is the machinery of a system of sanitary police, such as we have here; and even on the small scale in which we have had it for six years it has worked marvels. It will stamp out not only small-pox but every other zymotic at the same time, and by the same measures, and then we need not trouble about vaccination—certainly it need not be compulsory.

But the case is still stronger with the lower animals. With them, as with us, civilisation has introduced zymotic poisons, which are absolutely unknown to the wild animal, and the reasons are not far to seek. In my capacity as one of the managers of a large public institution, I had recently to investigate the cause of an endemic of swine plague, and I found a state of matters which had caused at the same time typhoid fever in a human patient.

Look at the arrangements of an ordinary British farmyard, and then believe that it is a matter of no wonder that rinderpest destroys the cattle, and diphtheria the farmer's children. The animals spend their lives in houses not lighted and not ventilated, or walk about in a mass of seething filth, on one side of which stands the farm house, every room reeking with the stench of the cattle-yard.

When it begins to dawn on the mind of the British public that all these diseases, both for man and animals, are absolutely preventible by the simple means of securing fresh air, pure water, and abundant light, they will be banished. Meantime inoculation may, and probably will, prevent individuals being attacked, but it will not stamp out the diseases, and it must be regarded as really a retrograde proposal when we have in our hands the means of complete prevention.

I hope I have thus made it clear that, deeply as I feel the strength of the objection to the practice of vivisection upon the



various grounds I indicated at the beginning of my paper, I urge against it a far stronger argument than these: that it has proved useless and misleading, and that in the interests of true science its employment should be stopped, so that the energy and skill of scientific investigators should be directed into better and safer channels. I hail with satisfaction the rousing which is evident in the public mind upon this question, and I feel confident that before long the alteration of opinion which I have had to confess in my own case, will spread widely amongst the members of my useful profession.



# VIVISECTION : IS IT JUSTIFIABLE ?

BY

CHARLES BELL TAYLOR, F.R.C.S.E. AND M.D., EDIN.,

FELLOW OF THE MEDICAL SOCIETY OF LONDON ;

LATE PRESIDENT OF THE PARISIAN MEDICAL SOCIETY.

An Address delivered before the Medico-Chirurgical Society of Nottingham  
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MR. PRESIDENT AND GENTLEMEN,

I have long thought that any advance we may hope to make in the direction of civilization, any step towards the amelioration of the evils of existing conditions, must be mainly by way of the recognition of rights—not only the rights of men and women who may be less fortunately placed than ourselves, but also the rights of those poor relations of ours whom we call animals, and to whom we owe so much of our enjoyment of life, so much of our well-being, so much of our prosperity, and but for whose cheerful and willing aid the business of the world could not be carried on. I must insist that it is our duty to treat these humble fellow-creatures of ours with the utmost kindness, care, and consideration, and that such duty is no less sacred than that which binds us in any of our social relations. It is true that the exigencies of our nature compel us to kill animals for food, and also in self-defence ; but we are bound to make such death as swift and painless as possible, and nothing—absolutely nothing, to my mind—can justify deliberate, prolonged, and cold-blooded torture of any of them.\* I need not dwell upon this point ; the principle is admitted on

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\* “The right to kill and the right to torture are essentially different, and the assertion that one right covers and includes the other, is simply childish. The whole agitation against vivisection rests on the position that between death, a quick and easy death, and the infliction of pain so severe and prolonged as to be fairly called torture, there is a great gulf fixed, and that the right to inflict the one by no means carries with it the right to inflict the other. The existence of this gulf is admitted by the common sense of mankind, and is shown, for instance, by the discontinuance of legal torture as compared with the persistence of capital punishment. Vivisectors have never ventured to meet their opponents fairly and squarely on this ground,—to lay down that the infliction of pain amounting to torture is unjustifiable, and to assert that they do not in fact inflict it. They do not do this because they know very well that to make such an assertion, and to base their cause upon it, would be to deliver themselves into the hands of the enemy.”—ARNOLD.



all sides; it is embodied in our laws against cruelty to animals, and the sentiment finds a ready response in all hearts which are not dead to the instincts of common humanity. Nevertheless we are told, and especially of late, that we must forego this claim of our animal friends to exemption from torture, in the interests or supposed interests of certain gentlemen, who assure us that they are in the pursuit of science; that the pain they inflict is trifling to a degree; that anæsthetics are for the most part employed, and that they have made discoveries which have benefited the human race. It therefore behoves us to ascertain how far these statements are worthy of credence, and to what extent, if at all, they may lead us to condone acts and deeds which we should certainly, *à priori*, condemn as atrocious to the last degree.

Well, here is a specimen of what is meant by the pursuit of science from a vivisector's point of view. It is called a moral experiment. "I inspired," says Dr. Brachet, Professor of Physiology at the Ecole de Medicine, of Paris, "a dog with the greatest aversion for me, by plaguing or inflicting some pain or other upon it as often as I saw it. When this feeling was carried to its height, so that the animal became furious as soon as it saw or heard me, I put out its eyes. I could then appear before it without its manifesting any aversion. I spoke, and immediately its barkings and furious movements proved the passion which animated it. I therefore destroyed the drum of its ears and disorganized the internal ear as much as I could, and when an intense inflammation, which was excited had rendered it deaf, I filled up its ears with molten wax. It could no longer hear at all. Then I went to its side, spoke aloud, and even caressed it, without its falling into a rage; it seemed even sensible of my caresses." Dr. Brachet repeated the same experiment on another dog, and assures us that the result was always the same.

Here is another, also called a moral experiment, which I quote from a speech by Dr. Shaw, delivered quite recently before the Royal College of Surgeons of Ireland, "The operator began by treating the animal kindly and winning its love and confidence. When these were secured he cut off an ear of the dog, who looked astonished but manifested no resentment. Next day he cut off a paw, and a few days afterwards another. Thus he went on from one outrage to another, slashing and stabbing till the experiment was complete. It was astonishing how much the animal endured before his confidence was gone and his love turned to hate. After the second paw was removed he continued to gaze up into his master's face, and to lick the hand that maimed him." Here is another which belongs to the same category, and is recorded by Baron Weber, a distinguished scientist, who tells us that a German gentleman cut out the puppies from a pregnant bitch and laid them

before the mother. He wished, he said, to ascertain whether she would exhibit affection for them such as is usually displayed when they are born in the natural way. When Mr. Lawson Tait announced the fact that the peritoneum was capable of digesting the immature foetus in cases of ectopic gestation, he tells us that certain German vivisectors put his assertions to the test by cutting out the immature puppies of pregnant bitches and stitching them in the cavity of the peritoneum. "I recall to mind," says Dr. Latour, who was present at the time a poor dog, the roots of whose vertebral nerves Majendie desired to lay bare to demonstrate Bell's theory which he claimed as his own, "the dog mutilated and bleeding *twice* escaped from under the implacable knife, and threw its front paws around Majendie's neck, licking, as if to soften its murderer and ask for mercy. I confess," says Dr. Latour, "I was unable to bear that heart-rending spectacle."\*

A similar scene is recorded by a student who was present at an experiment in this country. The dog, alarmed at the awful preparations, sat up and begged for its life of each assistant in turn. The students, moved at this pathetic appeal, endeavoured to save the poor creature, and offered to buy it, or do anything in order that it might be set free, but in vain; it was cruelly tortured, and reproduced at the next lecture for a repetition of the process, under which it died. "Repeated electrical stimulation," says the Editor of *The Lancet* (Sept. 17th, 1881), "appears to produce in rabbits a state of tetanus arresting respiration, which may be kept up artificially." In respect of dogs, the following account is given of those experimented on by M. Richet. "In the dogs," he says, "the electricity employed was not sufficiently powerful to arrest respiration, and death was due to elevation of temperature. The ascent of the thermometer was extremely rapid, so that after the *tetanus* had lasted for *half-an hour*, the lethal temperature of 111 or 112 degrees Fahrenheit was reached. The proof that the increased body heat was the cause of death, was furnished by the fact that if the animals were kept cool by artificial means they will bear for *more than two hours* extremely strong currents, which cause severe tetanus without dying for some days. The breathing is so frequent that it is hardly possible to count it, and so feeble that scarcely any air enters the thorax." These miserable animals were thus subjected for two hours at a time to currents of electricity which caused such intense agony of cramp and heat together, that they either expired with their blood fourteen degrees above the

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\* The same man, M. Majendie, lecturing to his class on one occasion with a toy greyhound fawning on his knee, remarked, "Gentlemen, the skin is a sensitive organ." He then slashed his pet with a sharp bistoury, the creature uttered a piercing cry. "That scream, gentlemen," said the eminent professor, "proves the truth of my assertion."



normal temperature, i.e., simmered as it were in their own vital fluid, or lingered for a day or two, having been kept cool by ice baths and other artificial means during their hideous torture.

An eminent London physician, in the Appendix to the Report of the Royal Commission, describes an experiment, of which the following is a brief summary. The subject, a dog, having been rendered motionless with curara, had its windpipe cut open, a nozzle inserted, and artificial respiration maintained by means of bellows; its head was then partially flayed, its spinal marrow cut through, needles dug into the exposed marrow, and shocks given by a galvanic battery. The nerves which lead from the brain to the heart were then burnt away, and the spinal marrow further stimulated. The doctor says, this *beautiful* and simple experiment we owe to a German physician, with whom I had the pleasure of repeating it here *very frequently* last summer."

In Pflüger's Archives of Physiology is recorded several cases of operations on the brain. "A very clever, lively, young female dog, which had learnt to shake hands with both fore-paws, had the left side of the brain washed out through two holes on the 1st of December, 1875; this caused paralysis of the right paw. On being asked for the left, the dog immediately laid it in my hand. I now demanded the right (says the Professor), but the creature only looks at me sorrowfully, for it cannot move it. On my continuing to press for it, the dog crosses the left paw over and offers it to me on the right side, as if to make amends for not being able to give the right." You would think that was enough torture to inflict upon one affectionate little creature; but, no; on the 13th of January more brain was sucked out with a pump. Even that was not enough; for on February 15th more was extracted, and on March 6th some more. You will wonder why it did not die: well, it did, for the last operation killed it. Fifty-one dogs had their heads pierced in several places, and portions of the brain washed out by this process, which was repeated again and again; the animals being kept in sore pain and trouble, as we can well imagine, as long as they survived, which was sometimes for weeks or months. Further details are given of what are called interesting experiments on a delicately formed little bitch, the left side of whose brain was extracted; the hind feet were then clamped with sharp pincers, which caused doleful whining, piteous howling, and foaming at the mouth. The poor creature soon became blind, and shortly afterwards died. "The brain," says the Professor, "was found on dissection to resemble a newly hoed potato field." Another dog who had had five holes bored in its head, and nearly half the brain extracted, lived from February 14th to March 15th. In several of these cases the animal became blind on one eye, and



in order to correctly estimate the failure of sight in this blind, or fast becoming blind eye, the Professor took out the other eye. "On the 8th of November, 1875," he says, "two holes were bored in the head of a bull dog, and the brain washed away; the animal became blind on the right side; I therefore, on December 11th, took out the left eyeball, so causing complete blindness." On the 10th of January, 1876, some more of this poor creature's brain was destroyed, and on the 5th of February some more; this time on the opposite side. A few days later this one more unfortunate victim sank from exhaustion. Here is another strange experiment, also recorded in Pflüger's Archives. The spinal cord of a strong grey poodle was cut on the 27th of February, and again on the 13th of March, 1875. The second cutting caused fearful ravages; the bladder becoming paralyzed, and the rectum protruded. As it appeared that it could not live long, PREPARATIONS WERE MADE TO PERFORM UPON IT FURTHER EXPERIMENTS! but the dog died before the preparations were completed.

Here is another strange experiment, recorded by the operator himself in the *Revue Nationale*, who tells us that he fastened several large dogs on a table and beat them with a heavy wooden mallet, striking the animals thirty-two times on one side, and again thirty-two times on the other, after which he dislocated both shoulders and fastened the limbs behind the animals' backs. He adds that he did this without anæsthetics, so that he might know how much pain was inflicted from the creatures' cries, and also because, he adds, we know the generous nature of the dog, who will at night lick the hand that in the morning had been employed in striking him with a heavy wooden mallet.

At page 204, of the Report of the Royal Commission on Vivisection, you will find an experiment on an animal under curara (the most cruel of all poisons, and which, although it paralyzes motion, only heightens sensation), is recorded. The subject was a small docile dog, which, a few minutes after the drug was injected under the skin, staggered on its fore paws, walking on the tips of its toes until it fell over, frothing at the mouth and weeping abundantly. Its windpipe was then slit open and the nozzle of a bellows connected with a gas engine used for artificial respiration inserted. The side of the neck, the side of the face, the side of the foreleg, and interior of the belly, were then dissected out, and the sciatic and other nerves exposed and irritated with galvanic shocks. No anæsthetic was used, and the agony the poor creature endured must have been awful; yet it was continued for ten hours, at the end of which time the operators left for their homes; but they did not release the subject of the experiment, or end its sufferings by death. It was purposely left helpless

and mutilated as it was, in order that they might resume their investigations next day without preliminary delay. When the next day came the poor dog was dead; the machine was at work (as it is, I am told, in these laboratories often night and day), but it was pumping air into and out of a dead body.

Here is a pathetic scene, recorded by Dr. John Clarke at the Church Congress. A surgeon operated on a dog, cutting out a part of the bowels and stitching the ends together. The operation was done under anæsthetics; but operations on the abdominal cavity entail at best much suffering, even when the patient receives the most assiduous nursing; but what about the nursing of a vivisected animal? It is left fastened to a board, generally the board on which it has been dissected. The *second* night after the operation in the case in question the animal lay there groaning and crying in pain. Its cries attracted another dog in the laboratory which was waiting the same fate. This one broke loose from its tether and went to help its wounded companion. It first gnawed through the cords that bound it, and then thinking apparently that the dressings were the cause of the pain, the dogs tore them off. They then ran round the laboratory together through the night, until the wounded one dropped from exhaustion, and was found in a dying condition from peritonitis at ten o'clock the next morning.

It may be alleged that these are exceptional experiments, not likely to be repeated, but I cannot admit that such is the case. The last experiment was the one it was proposed to repeat upon a vast number of dogs at our University Buildings; and it is not many weeks since a French surgeon poured boiling lead into a dog's ear, regardless of the frantic screams and struggles of the poor creature, who tore its limbs in vain efforts to escape. I said this kind of thing is going on every day, and it must be so when you have your laboratory and your licence and your stables and your cages and your dogs and cats and rabbits and horses and assistants and torture troughs and gas engines for artificial respiration, and onkometers and onkographs and the various instruments supplied by the Scientific Instrument Company, which I am assured does a large trade. The vivisecting professor must do something to justify his existence and deserve his pay in that capacity, and here is a description of what he does, which I quote from the pen of an eye witness and participator, who repented his share in the proceedings, as I make bold to think most must do when advancing years forces them to calm reflection, and, as in many instances, to bitter retrospection.\* "I venture to record," says Dr. Hoggan,

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\* When Dr. John Reid met his friend Fergusson (afterwards Sir William) in the street, he burst into tears and exclaimed, "This is a



“a little of my own experience in this matter, part of which was gained as an assistant in the laboratory of one of the greatest living experimental physiologists. In that laboratory we sacrificed daily from one to three dogs, besides rabbits and other animals, and after much experience I am of opinion that not one of those experiments on animals was justified or necessary. The idea of the good of humanity was simply out of the question and would have been laughed at, the great aim being to keep up with, or get ahead of, one's contemporaries in science, even at the price of an *incalculable amount of torture*, needlessly and iniquitously inflicted on the poor animals. During three campaigns,” he adds, “amidst the horrors of war, I have witnessed many harsh sights, but I think the saddest sight I have ever witnessed was when the dogs were brought up from the cellar to the laboratory for sacrifice. Instead of appearing pleased with the change from darkness to light they seemed seized with horror as soon as they smelt the air of the place, divining apparently their approaching fate. They would make friendly advances to each of the three or four persons present, and as far as eyes, ears, and tail could make a mute appeal for mercy eloquent, they tried it in vain. Were the feelings of experimental physiologists not blunted, they could not long continue the practice of vivisection. They are always ready to repudiate any implied want of tender feeling, but I must say they seldom show much pity; on the contrary, in practice they frequently show the reverse. Hundreds of times I have seen when an animal writhed with pain, and thereby deranged the tissues during a delicate dissection, instead of being soothed it would receive a slap and an angry order to be quiet and behave itself. At other times, when an animal had endured great pain for hours without struggling or giving more than an occasional low whine, instead of letting the poor mangled

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judgment on me for my cruelty to animals.” He was a fine, handsome, powerful man, in the prime of life, and the grave suddenly yawned at his feet. He was doomed to die, and shortly, of cancer of the tongue, an organ in the region of which his vivisections had been mainly directed.—Professor Syme, probably the greatest operator of this century, the Napoleon of Surgery, lived to denounce vivisection as cruel and useless.—Pirogoff, the great Russian surgeon, tells us how his dying dog, in midst of his sufferings and at the point of death, fixed his plaintive eyes upon his master, and made an effort to give a last sign of recognition to one who tells us how he suffered when he remembered the tortures he had inflicted upon hundreds of other dogs. He says, “My heart was full.”—Professor Haller records a precisely similar experience; so does Dr. Crisp; and so does Sir Charles Bell, who greatly regretted one or two experiments he was compelled to perform in order to illustrate his discovery made from the anatomy only of the spinal nerves. He says, “It is but a poor manner of acquiring fame, to multiply experiments on brutes and take the chance of discovery; we ought, at least, to get at truth without cruelty, and to form a judgment without having recourse to torture.”



wretch loose to crawl painfully about the place in reserve for another day's torture, it would receive pity so far that it would be said to have behaved well enough to merit death; and, as a reward, would be killed at once by breaking up the medulla with a needle. One of the most revolting features of the laboratory was the custom of giving an animal on which the professor had completed his experiment, and which had still some life left, to the assistants, to practise the finding of arteries, nerves, &c., in the living animal, or for performing what are called fundamental experiments upon it; in other words, repeating those which are recommended in the laboratory handbooks."\*

"I have known," says Dr. Allix, the well-known French veterinary surgeon, "dogs die of sheer terror in anticipation of their doom before the vivisector had time to commence his operations."

"The experiments lately performed on female dogs will con-

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\* Baron Weber describes a visit which he paid to a large physiological laboratory when the students and professors were away on vacation. He says he was led into the cellars, where iron boxes are kept for securing the dogs till wanted; they were capable of holding fifty dogs. He asked the conductors where they came from. "Oh, from the dealers and so on," with a grin. The Baron advises those who are fond of animals not to let their dogs go unguarded in the streets. One intelligent-looking dog, with evident forebodings, had gnawed a considerable hole in one of the oaken doors of his cage, in the hope of escape. The Baron's guide said it would not help the blackguard, for if he got loose he could not get out of the place. The long tables were smeared with blood. He also describes the torture troughs, and remarks that the last dog who died in this way had been honoured with a *memento mori*, for on one of the ends of the box a student had drawn in chalk the head of a pretty little dog with angel's wings attached to his shoulders, and the legend written underneath, "*Requiescat in pace*." On asking if the animals were rendered insensible before being experimented on, the Baron was told that they were all poisoned with curara. "My guide now led me into another very small, cold room, in which were two large freezing boxes. One, a large, round tub, my guide said, was 'for freezing a live dog till he became quite stiff.'" A cold shudder creeps over one when one thinks of the poor terrified and whining animals, after being kept for weeks in these gloomy cellars, being thrown at last into a tub to be frozen stiff. Dogs frozen in this way at intervals, live to the sixth day.—See *Report of the Imperial Rudolph Institution for 1869*, p. 112.

Dr. Leffingwell records the following exhibition, recently made before an American audience. "It was affirmed on one occasion by a Professor of Physiology before his class, that the fur of animals prevents radiation of animal heat and is thus a protection against cold, and that an animal deprived of fur, or with that fur rendered useless by varnishing, would suffer if exposed to extreme cold." No one out of a lunatic asylum could doubt this; yet three animals were brought in,—one shaved, one varnished, one untouched; the three were then packed in ice. No anæsthetic was given; their piteous moaning gradually grew fainter, and at last ceased altogether. They were then unpacked; one was dead, the two others, frozen stiff, were resuscitated for other experiments, i.e., FURTHER TORTURE, ON ANOTHER DAY.

tinue to haunt and distress me to the last day of my life," says Dr. De Noë Walker, late army surgeon, who gave evidence before the Royal Commission. "As soon as the poor mother had given birth to a litter of puppies, the vivisector visited her on her bed of straw, whereupon, moved by the finest feelings of her nature, she looked up into his face, her dilated pupils beaming with joy and expectant sympathy. Up he lifts her and presently excises all her mammary glands. The next day she is again visited by her tormentor, but on seeing him her terror is indescribable. The poor puppies were of course starved to death.

"It is marvellous and astonishing," says Professor Goltz, "to find that a dog that had *served for some seven experiments* and whose hind quarters were completely paralyzed, and whose spinal marrow had been destroyed, the animal suffering besides from fatal peritonitis, was still capable of maternal feelings for its young. She unceasingly licked the living and the dead puppy, and treated the living puppy with the same tenderness as an uninjured dog might do."

"I will take," says Mr. R. T. Reid, in his speech in the House of Commons, "a series of experiments performed by Professor Rutherford of the University of Edinburgh, and reported in *The British Medical Journal*. These experiments were thirty-one in number; no doubt there were hundreds of dogs sacrificed upon other series of experiments, but now I am only referring to one set. There were in this set thirty-one experiments, but no doubt many more than thirty-one dogs were sacrificed. All were performed on dogs and the nature of them was this. The dogs were starved for many hours, they were then fastened down, the abdomen was cut open, the bile duct was dissected out and cut; a glass tube was tied into the bile duct and brought outside the body. The duct leading to the gall bladder was then closed by a clamp, and various drugs were injected into the intestines at its upper part. The result of these experiments was simply nothing at all—I mean it led to no increase of knowledge whatever, and no one can be astonished at that; because these wretched beasts were placed in such circumstances—their condition was so abnormal—that the ordinary and universally recognized effect of well-known drugs was not produced. These experiments were performed without anæsthetics."

Sir W. Ferguson, in his evidence before the Royal Commission, gives an instance of a dog who was crucified for several days, and brought into the class from time to time to show how the experiment was going on. Evidence was also given that dogs and rabbits had the nerves that govern the muscles of the throat divided, so that they could not swallow the food that was placed before them; they kept on continually munching, but all the same they died of hunger. Dr. Crisp, in his evidence before the same Commission (Q. 6,157), alludes to the well-known cases of vivisection that were practised at the veterinary schools of



Alfort, Lyons, and Toulouse. Sixty-four operations were performed upon the same living horse ; eight students would be engaged on the same animal at the same time ; five or six horses were used up in this way in a week ; and no anæsthetics were employed. The operations commenced at six in the morning, and ended at six at night. The eyes were cut out, the teeth punched out, the hoofs torn off, the body fired, and every conceivable operation upon nerves, arteries, veins, bladder, and skull, was performed upon the groaning, writhing beast ; and it was considered highly creditable to the young students if they could keep the animal alive until the last, i.e., until six at night.

Here is a report from an eye witness, Dr. Murdoch, of what actually occurred upon one occasion. " A little chestnut mare, worn out in the service of man, had unfortunately survived the numerous tortures of the day and no longer resembled any creature of this earth. Her thighs were cut open, the skin torn away, ploughed through with hot irons, harrowed with dozens of setons, the sinews cut through, the hoofs torn off, and the eyes pierced. In this blind and powerless condition the miserable creature was placed, amid laughter, upon its bleeding feet, to shew those present who were operating upon seven other horses, what human skill could perform before death released their victim."

It seems incredible, but it is a fact that Abdul, the celebrated beauty, the horse that bore the late Emperor of Austria at his coronation, was, at the close of his career, worn out and feeble, subjected to this hellish process.

Dr. Carpenter mentions in his work on Physiology, a professor who inserted a tube into a dog's stomach and then filled it with boiling water. A number of cases are also reported where dogs were covered with turpentine and then set fire to (burnt alive). Others, where full-grown sheep dogs have been immersed up to the neck in boiling water, and kept as long as they would live afterwards ; others, where they were kept for weeks without food ; others, where quite a number of dogs were skinned alive. The Professor fully describes the process, complains of the difficulty he experienced in flaying the paws and head, and tells us that he kept them in cotton wool so long as they would live after the operation. Others, where dogs and cats were subjected to atmospheric pressure until they became as stiff as boards, and their brains ran like cream ; others, where the kidneys were cut out and the animals kept alive as long as possible ; others, where the bladder was ligatured to prevent the discharge of urine, the gullet tied to prevent sickness after emetics or poisons had been administered, and others where the natural vents had been permanently clamped ; others, where animals were baked alive or trephined and their brains sucked out with a force pump or burnt out with hot wires ; others, where dogs were suffocated and brought to life again and again, and kept alive for weeks and



months for a repetition of the process. Similar experiments on apes, monkeys, cats, rabbits; in short on every creature that has life and can feel, are recorded; while other unfortunate animals were submitted to an unintermitting torture of every conceivable description (without injuring vital parts) for weeks, merely to ascertain how much actual pain it took to kill them. And so on, horror upon horror's head accumulating, until one is sick with grief, indignation, and disgust at the whole business.

I think I have said and quoted enough to show that the science of which the vivisector is in pursuit, is not true science, and that the pain inflicted by him on his innocent victims is not slight, but atrocious to the last degree. Let us now see what is meant by the assertion that anæsthetics are employed. Dr. Hoggan says that anæsthetics have proved the greatest curse to vivisectible animals, and I entirely agree with him. The public would not tolerate vivisection for a day if they did not believe that the animals were rendered insensible, and the plain fact is that they are not rendered insensible; more than half the licences dispense with anæsthetics. It is the public who are anæsthetised,—it must be so; for in many experiments, to render the animal insensible would be to defeat the object of the operator, such as those, for instance, connected with the reflex action from the sensory nerves; those connected with the glandular secretions, as in Hughes', Bennett's, and Rutherford's, experiments on the liver; again, those on digestion, and those on the temperature of the heart and arteries, and those in which it is necessary to use a gas engine for artificial respiration; those on the phenomena of pain; the boiling, baking and stewing alive experiments; drowning, starving to death, alcoholisation, and feeding on substances which are incapable of sustaining life. It is the same when the effects of drugs and poisons have to be tested; and also in a numerous class of experiments which require time—days, weeks, or months—for their completion. The animal, if it goes to sleep, goes to sleep in health, in ease, to awake in torment that can only end with its most wretched life. And again, when an operation is performed and the animal is kept alive, often in great agony, in order that the results may be observed, as in numberless operations and in all pathological experiments. Besides it is most difficult to render an animal insensible and at the same time keep it alive. Vomiting frequently interrupts the process, during which the animal comes round, and my experience with chloroform on dogs is that as soon as they are insensible they cease to breathe, and this experience is borne out by that of Professor Pritchard of the Royal Veterinary College, a gentleman who has had more experience in this direction than any man living, who says, in effect, that as soon as the animal is insensible you find that it is dead. "They appear for some time not to be under the influence of it at all, and then suddenly they come under the influence of it, and we find it

impossible to bring them round.” The practical consequence of this is, as Dr. Hoggan has remarked, “that complete and conscientious anæsthesia is seldom even attempted, the animal getting at most a slight whiff of chloroform, by way of satisfying the conscience of the operator or of enabling him to make statements of a humane character.” Dr. Walker’s evidence before the Royal Commission was to the same effect. He said, “It is quite true that anæsthetics are used, but if by that you understand that while the animal lived and was experimented on he was throughout insensible, it is the greatest delusion that ever was.” Physiologists are well aware of these facts, hence you find it stated that they occasionally use ether; but it is very difficult, owing to the conformation of face and the necessity for tying the mouth up, to give ether to dogs, the animals principally operated on; you require to smother them, and if the anæsthetic is intermitted for a moment they come round; and we consequently find it stated that the ether has been supplemented by morphia injected under the skin, which, although it stupefies, does not prevent the animal from feeling. “*Ils sent la douleur*,” as Bernard says. Or, worst of all, curara—“the hellish wourali,” as Lord Tennyson very properly calls it,—a drug which makes it impossible for you to give chloroform safely, or to say whether the animal is insensible or not, since all the muscles of expression are paralyzed, and which, while it paralyzes motion, actually increases the animal’s susceptibility to pain—pain described by Claude Bernard himself as “the most atrocious the mind of man can conceive.”

So much for anæsthetics and the slight amount of pain inflicted by vivisectors. Now let us see what benefits the human race, our noble selves, have derived from these diabolical torments inflicted upon our innocent and helpless fellow-creatures. Dr. Hoggan says the idea of benefit to the human race would be laughed to scorn by the vivisector, the sole object being to get ahead of one’s contemporaries in science. I do not say that any benefits would justify us in inflicting these torments; they would no more justify us than an increased price would justify the man who skinned cats alive in order to preserve the gloss of their coats. But I want to know what they are and where they are. I confess I do not know, although I have tried hard to find out.

“My soul

Assures me humanity is wisdom,  
And they who want it, wise as they may seem,  
And confident in their own sight and strength,  
Reach not the scope they aim at.”

If you ask those who support vivisection what this Joanna Southcote of science has brought forth, they either talk unmitigated nonsense or favour you with vague, unmeaning generalities which are little less absurd. Here is a specimen of the latter which I cull from a recent letter by an able practitioner, apologising for the system: “Have any of your correspondents,” this



gentleman says, "thought seriously of the law of prey and the struggle for life which is going on everlastingly in the world around us? Tennyson's 'Nature red in tooth and claw' depicts in not too vivid colouring the scene of the cosmos. Do we not see how all through the realm of animal life destruction and suffering are the means by which advancement is made from a lower to a higher and more complex organization; how the principle of sacrifice seems to run like a shining thread through the web of the universe, interwoven into its very order. When we stand on the place where innumerable multitudes of living sentient things fall a prey to the conditions of development which are set up by the Maker, surely we shall not be unwilling to yield to a few earnest seekers after truth the means of gaining that knowledge which is to lessen so considerably that sum of suffering which is one of the heaviest curses of the world." The writer continues: "Our sympathies for the mangled victims of the sportsman's pleasure are shadowed by the lurid picture which Miss Cobbe's impressionist brush makes for us; and yet the horrors of the laboratory are a mere fiasco in extent to the dreadfulness (*sic.*) of the deeds which are done in the fields for our own good and pleasure. In the light of the latest results of brain surgery; of protective inoculations; of the discoveries of Virchow, Pasteur, Lister and Ferrier, one is bound to admit the needfulness of experiments if scientific medicine is to advance."

And so on; but what does it all mean? We are not savages contending against a hostile tribe who would torture us; we are not engaged in a struggle for life with wild beasts who would tear us limb from limb; even if we were, torture would not be justifiable. But just conceive the shame of it,—the pity of it. The animal we principally sacrifice is our best friend,—Byron said he never knew but one, and that was his dog Boatswain;—our faithful companion who loves, honours and obeys us; who has given his life for us a thousand times; who is eager at any moment to imperil life and limb in our service; who has even been known to die of grief on his master's grave, and to starve to death in the open rather than cease to guard his dead body. Let me beg of you, if only for the honour of our noble profession, to think of the sin involved—of the cruelty involved—of the treason, of the cowardice, of the utter pitilessness involved—as Miss Cobbe has remarked, in tying down this faithful friend, on a torture trough, and slowly mangling its brain, its eyes, its entrails, until after hours—it may be days or weeks—of the most exquisite torture, he perishes in a degree of agony of which we can form no conception. Surely, if there is a future—surely, if man is responsible—surely, if it is the merciful that shall obtain mercy,—it is not kind of us to allow our misguided friends to go on with this bloody work, or to bow down to those eminent men in our own profession who would conduct our



youth into the same path which, if there be any truth in religion, can but lead to destruction.

Ye therefore who love mercy, teach your sons  
 To love it too. The springtime of our years  
 Is soon dishonoured and defiled in most  
 By budding ills, that ask a prudent hand  
 To check them. But alas! none sooner shoots  
 If unrestrained, into luxuriant growth  
 Than cruelty, most devilish of them all.  
 Mercy to him that shows it is the rule  
 And righteous limitation of its act  
 By which heaven moves in pardoning guilty man;  
 And he that shows none, being ripe in years,  
 And conscious of the outrage he commits,  
 Shall seek it AND NOT FIND IT, in his turn.

Compare, I say, the horrible tortures which I have described and thousands of others of a similar character which are going on day and night in the licensed laboratories of this country and abroad, with the shot of the sportsman or the sudden death in hot encounter, which is the fate of so many of the lower animals, and tell me if it is not simply absurd to declare that "the horrors of the laboratory are a mere fiasco in extent to the dreadfulness of the deeds of the sportsman," or those of nature herself. Besides, if the cruelties of sport are to be deprecated, how much more must all right-minded persons condemn deliberate, cold-blooded and prolonged torture, no matter for what selfish purpose it may be perpetrated? As to the discoveries by vivisection that have benefited the human race, it has been proved over and over again that Pasteur's inoculation, both in anthrax and hydrophobia, have done infinite harm and not the slightest good; Lister's antiseptic system was worked out, as everyone knows, in the hospital, at the bed side and, to the best of my belief, quite independently of experiments on animals—in fact, they would have been quite out of place; and as to Ferrier's operations upon dogs' and monkeys' brains, why, such operations have taught us nothing but what equally good and better authorities have, and I believe with justice, declared to be both false and misleading. How then is it, you will very naturally inquire that the British Medical Association should pass a resolution declaring "that experiments on living animals are of inestimable benefit to man and animals, and that the continuance and extension of such investigations is essential to the progress of knowledge, the relief of suffering, and the saving of life" How, indeed! Well, the passing of such a resolution, which in my opinion is a libel on the British Medical Association, is accounted for, first, by the fact, to which Mr. Jonathan Hutchinson, the proposer, alluded, that probably not one in one hundred of those present had ever performed any experiments on animals at all; and I will add, since they were educated and refined gentlemen, that they also probably had not the remotest idea of what they were doing; secondly, by the

fact that, owing to the shortness of the notice, equivalent to no notice at all, the resolution was sprung upon the meeting, and there was consequently no discussion and no opportunity of opposition; and third, that those who were present and who were opposed to vivisection did not like to appear singular, and as one of them remarked to me, "be the only ones to stand out."

Let us see now what arguments were adduced in favour of this ridiculous proposition. Mr. Hutchinson said, first, that the members of the Association ought to pass the resolution because those persons who practised vivisection were exposed to a certain amount of odium and ought to be protected. Second, that experiments on animals were not cruel, because nothing deserved the definition of cruelty which had for its object the alleviation of suffering. Third, that Sir William Gull had said that "there was no cruelty comparable to ignorance;" and fourth, that those who were opposed to vivisection were like certain whelk shells turned the wrong way. Dr. Ransom, the seconder, merely added that the right to vivisect was a matter of privilege or liberty, and "the price of liberty was eternal vigilance,"—in fact it was "whelks and liberty" over again. But what did it all amount to? Persons who practise such cruelties as I have described must be expected to be exposed to odium; and it is certainly not the business, even if it were in the power, of the British Medical Association to protect them. Moreover, cruelty is cruelty with whatever object it may be perpetrated; and it is an insult to common sense to pretend that the man who flays dogs alive by the score is not cruel simply because he says he is trying to find out something about the functions of the skin. Sir William Gull's pompous remark really meant nothing at all; and the eccentric persons who are compared to sea shells turned the wrong way are, as Sir John Stuart Mill has remarked, really the excellent of the earth; they are the men and women who accomplish all good and useful ends, not by going with the stream like dead fish, but by buffeting the tide.

No, Sir, no good ever came of vivisection ever since the world began; and in my humble opinion no good ever can. Never mind what physiologists say; as Ouida has remarked, the arrogance, the conceit, the sophisms of the so-called scientists of to-day are as like the arrogance, the conceit, and the sophisms of the Bidas and Torquemadas of old, "as the Physiological Laboratory is like the Torture Chamber of the Inquisition." We have got rid of one, and we shall get rid of the other. Meantime, never let it be said that we as a Profession were on the side of wrong, of cruelty, of injustice and oppression. The main task of civilization has ever been the vindication of the rights of the weak. Animals have rights (so much is conceded by our laws), and men have duties towards them; and for us to ignore the one, or counsel neglect of the other, is simply to proclaim ourselves enemies of the human race and foes to its destined progress.



*The following are the Author's replies to the arguments brought forward in favour of Vivisection, during debate at the close of his paper :—*

“NIHIL UTILE QUOD NON SIT HONESTUM.”

#### THE CIRCULATION OF THE BLOOD.

It is true that Harvey was a vivisector, but it is not true that he discovered the circulation of the blood by means of vivisection; on the contrary, so long as he confined his attention to vivisection he was continually wading through blood, agony, and torture only to arrive at doubt, uncertainty, and contradiction. Here are his own words: “When I first gave my mind to vivisection as a means of discovering the motions and uses of the heart, and sought to discover these from actual inspection and not from the writings of others, I found the task so truly arduous, so full of difficulties, that I was almost tempted to think with Frascatorius that the motion of the heart *was only to be comprehended by God, my mind was therefore greatly unsettled*, nor did I know what I should myself conclude, nor what believe from others.” He adds “I was led to distrust the existing belief of the course of the blood by CONSIDERING THE ARRANGEMENT OF THE VALVES OF THE VEINS (which of course could only be studied on the dead body). It was plain that the common doctrine that the blood moved to and fro in the veins outwards from the heart and back again was incompatible with the fact of the direction of the valves which are so placed that the blood could only move in one direction.” Now, as Dr. Bridges, the Harveian orator for this year (1892), has pointed out, “Servetus and Colombo had demonstrated before Harvey that the blood passed from the right ventricle through the lungs to the left side of the heart; and Cesalpino had shewn that in consequence of the arrangement of the mitral and aortic valves, the flow of blood must necessarily be from the left ventricle towards the various organs of the body.”

This could not be demonstrated on the living body, as Dr. George Macilwain, Fellow of the Royal College of Surgeons, remarked in his evidence before the Royal Commission (Blue Book, p. 96), “You could not discover the circulation in a living body; I do not see how it is possible to do so; if you had a dead body then it is so easy to discover the circulation of the blood, that it is difficult to understand how it was not done before (Harvey's time), because *if you inject the arteries* you find that the fluid is returned by the veins.” That is the simple truth; whereas, if you attack a living animal, you are at once blinded by the blood which gushes forth at the first incision, and can make nothing out. “Harvey himself,” says Dr. Lauder Brunton in his Gulstonian Lectures (*British Medical Journal*, March 17, 1877), “was led to form his ideas regarding the course taken by the blood *from the position of the valves*



of the veins, and might possibly have been able to discover it exactly without making a single experiment." Similar evidence before the same Commission was given by Dr. Acland, Regius Professor of Medicine at the University of Oxford; and "The more Harvey's immortal work is studied," says Dr. Bridges, "the more palpable is the fallacy that his discovery resulted from any such process of direct inspection as vivisection is supposed to give. *Comparison of structures—direct observation of structures*—these supplied Harvey with his materials, and *profound meditation* did the rest."

#### THE CURE (SO-CALLED) OF HYDROPHOBIA.

It is true that Pasteur discovered, if we can call it a discovery, his so-called cure for hydrophobia by vivisection; but it is not true that his so-called cure is any cure at all. On the contrary, it is pretty clearly established by now, that Professor Michel Peter's observation, made years ago, is strictly correct: "M. Pasteur ne guerit pas la rage, il la donne,"—"he does not cure hydrophobia, he gives it." Here are the latest figures in proof thereof, which I quote from an excellent address on the subject, delivered at the recent Church Congress by Dr. F. S. Arnold, M.B. and B. Ch. Oxon:—"The report of the French Conseil Superior de l'Hygiene shows that from 1850 to 1885, the average annual mortality from hydrophobia in France was 23; from 1885 to 1890 inclusive, after Pasteur started his inoculations, there was a yearly average of 39 deaths in the same country, and under precisely similar conditions." "In England the deaths from hydrophobia from 1880 to 1884 inclusive, were 153, while those from 1885 to 1889—years during which many persons bitten by dogs were sent from this country to Pasteur—were 159, giving a full addition of one to the yearly average." In addition to these conclusive facts, showing the utter failure of Pasteur's inoculations to diminish the number of deaths from hydrophobia, we have the fact that close upon 240 persons have died after having submitted to his treatment, and many of these clearly in consequence of it.

#### THE PREVENTIVE TREATMENT (SO-CALLED) OF ANTHRAX.

It is true that Pasteur discovered his so-called preventive treatment of anthrax by experiments on animals, but it is not true that his inoculations have been of any service, or anything, when faithfully carried out, but a source of danger and disaster wherever they have been adopted. Indeed so clearly has this been demonstrated, that his system has been emphatically condemned by the German and English Commissioners appointed to inquire into it, and actually prohibited (as it ought to be in this country) by the Hungarian Commission, and for the following reasons:—1—Because the spores of anthrax are so indestructible that, once started, it is almost

impossible to get rid of them ; they will survive immersion in solutions of the most powerful chemicals, such as corrosive sublimate and carbolic acid, and will even resist the action of boiling water (unless the ebullition is continued for upwards of five minutes—see report of experiments in Bacteriological laboratory, Berlin, quoted in *Medical Press*) ; and because they will also live in pastures for years, through all weathers, and prove as fatal both to man and beast at last as at first.

2—Because when the spores and bacilli of this microbe are injected into the cellular tissue of a healthy animal, its blood, its nasal and buccal mucous discharges, its excrement, and secretions are speedily swarming with bacilli, and it is at once scattering the seeds of this malignant and loathsome disease wherever it goes.

3—Because it is simply absurd to suppose that any protection can be gained in this way, because one attack of anthrax, malignant pustule, and splenic fever, as it is also called,—unlike scarlet fever, measles, and such like diseases,—confers no immunity against another attack.

4—Because even the advocates of the system do not claim protection beyond a short period (a few months), and insist that the operation must be constantly repeated.

5—Because ten per cent. of the animals, even under favourable circumstances, die, and those who recover do so with their health permanently damaged.

6—Because the flesh, the milk, the butter, and cheese of such inoculated animals are contaminated and unfit for food.

7—Because the operation has proved fatal to a vast number of animals. M. Paul Bouillier, for instance, says that inoculation for anthrax has had but one result—that of causing the death of ten times more animals in France than are lost annually in the natural manner. Among hundreds of examples, he cites three. M. Grandchamps, he says, lost 5,000 francs worth of horses and cows from inoculation. M. Fournier inoculated 400 sheep, of which 90 died ; the mayor of St. Germain and M. Marcel le Brun lost between them as many sheep as have died in thirty Communes where no inoculation goes on, and 45 times more than were lost by five other farmers who own sheep in the same district where no inoculation is practised. It is by millions, he says, that we must count the losses in France from anthrax inoculation. It is said that the system has since been perfected ; but M. Luteaud, in a recent communication, tells me that French farmers have had such disastrous experience, that they now refuse to allow their animals to be inoculated ; and it is not long since the brothers Pankaljeff, Russian millionaires, allowed Dr. Bardach to inoculate their stock, as a result of which proceeding in two days 3,552 sheep died, 1,200 horned cattle likewise perished, and also hundreds of horses.—(*Journal de Medicine*, Paris, 1889). Professor Peter tells us that at about the same time inoculation was practised upon 4,564 sheep at Kachowa in Southern



Russia, of which 3,696 died—(*Provincial Medical Journal*, May, 1890); and from a report in *The Standard* for July 9th this year (1892), I find that in New South Wales, where M. Pasteur's representatives inoculated a flock of 12,524 sheep, 3,174 died. 8—Because, when these things do not happen, it is simply because the vaccine used has been sterilized down to the innocuity of rain water, and can neither protect or injure; on which point Dr. Klein, in his Supplement to the Twelfth Annual Report of the Local Government Board (p. 208) remarks:—"Is a cultivation in which in course of time the bacillus anthracis, at first forming a copious growth, degenerates, and in which no spores had been formed, and further which cultivation loses, as we know, its power to infect with virulent anthrax animals when inoculated,—that is to say, such a cultivation as M. Pasteur's vaccine professes to be,—is such a cultivation, I say, perfectly ineffective too, in giving the animals some sort of immunity against further inoculation with natural material? The answer is, "Yes; IT IS PERFECTLY INEFFECTIVE." And finally, as an eloquent writer has observed, "Accepting vaccination, however, as a preventive from one disease (smallpox), how will it be when we and our cattle employ twenty similar preventives for twenty other diseases? Is it really to be believed that the order of things has been so perversely constituted as that the health of men and beasts is to be sought, *not*, as we fondly believed, by pure and sober living and cleanliness, but by the pollution of the very fountains of life with the confluent streams of a dozen filthy diseases?"

Mr. Fleming indites a psalm of triumph over the prospect of a boundless field of inoculations just opening to the activity of medical men and veterinary surgeons, who will go forth like so many sowers to scratch the people and cattle instead of the ground, and drop cultivated virus by way of seed, or possibly tares, as the case may prove. Are we then, our oxen, our sheep, our pigs, our fowls,—(that is to say, our bodies and the food which nourishes them)—all to be vaccinated, porcinated, equinated, caninised, felinised, and bovinated, once, twice, twenty times in our lives, or every year? Are we to be converted into so many living nests for the comfortable incubation of disease germs? Is our meat to be saturated with "virus," our milk drawn from inoculated cows, our eggs laid by diseased hens,—in short, are we to breakfast, dine, and sup upon disease by way of securing the perfection of health? God forbid!

#### THE LOCALISATION OF BRAIN DISEASE.

It is true that Professor Ferrier has performed numerous vivisectional operations upon the brains of apes and other animals, and has in consequence arrived at certain conclusions



with regard to the functions of certain definite portions of the cerebrum ; but it is not true that these experiments have resulted in benefit to the human race, or that the conclusions are trustworthy, or that he has given us any guide on which we can depend in operating upon the brain. On the contrary, cases of brain tumour that are at once accessible and capable of being localised are so extremely rare, that the benefit to the human race of such brain surgery must in any case be very small. Again, those physiologists who have repeated Ferrier's experiments deny his conclusions, and it is a fact that the only positive knowledge we have as to the functions of the brain has been derived from careful observation of human patients during life, and careful *post mortem* examinations of those who have succumbed after death. Let us examine these points a little in detail. Patients suffering from brain tumour are not very numerous ; nevertheless the Morbid Growths Committee of the Pathological Society have collected and tabulated fifty-four cases ; of these only two, even under the most favourable circumstances (i.e., with a certain knowledge of the *locale* of the tumour) seemed on *post mortem* examination to have been suitable for operation ; and Dr. Goodhart, physician to Guy's hospital, who is a great pathologist, says that in thirteen years of *post mortem* work he did not remember seeing a single case in which the tumour was at once accessible and capable of being localized.—(Pathological Society's Transactions, quoted in *The Medical Press*, Jan. 26th, 1887). He very naturally adds, "That in the region of cerebral tumours other than inflammatory, it therefore seems very doubtful if surgery has any future worth mentioning before it." Speaking on the same point, the Editor of *The Medical Press* remarks, "That if such cases (prospecting for brain tumours) proved fatal, the jury must give a verdict against the surgeon who operated ;" and the Editor of *The Lancet* (November, 1883) says that, "If Dr. Ferrier's suggestions meet with much practical response, it is to be feared that the cerebral localisation will soon have more deaths to answer for than lives to boast of." It is clear, therefore, that in cases other than inflammatory, or resulting from direct injury, where the history of the case, the heat, the pain on pressure, and other local symptoms would guide us, that there is not very much to be done in the way of brain surgery, and that we cannot possibly have derived the benefit which is claimed as a result of Ferrier's experiments on monkeys.

Speaking on this point Sir W. Bowman says, "Vivisections upon so complex an organ as the brain are ill calculated to lead to useful or satisfactory results:" and Ferrier himself, in the preface to his *Treatise on the Functions of the Brain*, says, "No one who has attentively studied the results of the labours of the numerous investigators in this field of research

can help being struck by the want of harmony, and even positive contradictions, among the conclusions which apparently the same experiments and the same facts have led to in different hands." "Indeed experiments on the lower animals, even on apes, often lead to conclusions SERIOUSLY AT VARIANCE WITH WELL ESTABLISHED FACTS OF CLINICAL AND PATHOLOGICAL OBSERVATION."

Again, Ludimar Hermann, Professor of Physiology in the University of Zurich, says, "Physiological experiments conducted in these regions (of the brain) are most indefinite. The usual plan of investigation, viz., that of applying stimuli to the brain substance, leads either to negative results, or, if electrical stimulation is used, to results which, owing to the *unavoidable dispersal of the currents in numerous directions*, are not sufficiently localised to form the basis for trustworthy conclusions." And Dr. Kingsford (M.D., Paris), says, "The conditions under which experimenters are compelled to work render the results liable to great misconception and error. Thus, in order to reach special tracts and areas of the brain, they are forced to push their instruments, whether heated or otherwise, through the superficial membranes and tissues of the hemispheres of the brain lying beneath the skull, and by these acts of laceration or denudation many complications are set up which often seriously interfere with the conclusions sought, making it difficult to determine what proportion of the results obtained may be due to *secondary and unavoidable injuries*." On the same point Dr. Charcot, in his work on the Topography of the Brain, after citing cases, has also said, "These examples are enough to show that, particularly as regards brain functions, the utmost reserve is necessary in drawing inferences from animals to man;" and Professor Goltz, some of whose experiments on the brains of dogs I have quoted, says, "It is not often that physiologists agree on matters relating to the physiology of the brain."

Charcot and Petres in France,—Hitzig, Munk, and Hermann in Germany,—Luciani and Tambourini in Italy,—and Doctors Schœfer and Goodhart in England—all differ from Ferrier in the conclusions drawn from his vivisectional experiments; and Professor Munk, in his book "*Functionem der Grosshirnrinde*," besides rejecting the conclusions of Flourens, Fritsch, Hitzig, Caville, Douet, Nothnagel, Schiff, Hermann, and Goltz, speaks of Ferrier's certainty in his own results as being only equalled by the impossibility of the slightest faith being placed in any of the results by any one who examines his researches; and Ludwig, whose laboratory at Leipzig is the largest in the world, compares these experiments to injuries to a watch by means of a pistol shot; \* while the Editor of *The Lancet* (Nov. 10th, 1883), commenting



on these facts, remarks: "Experiments led Flourens and all the *chief physiologists of the day* to the conclusion that no function was specially performed in any one geographical region of the cortex (of the brain), but that every part subserved the functions of which any was capable, and these experiments were made with as much care and as much skill as those which have led Fritsch, Hitzig, Ferrier and others to conclusions diametrically opposite. Moreover, in the full light of these latter researches, one of the most distinguished physiologists of the present day has come to *conclusions not far removed from those of Flourens*, and the author of the most popular text book of physiology now hesitates between the two opinions."

It is thus evident that experimenters are hopelessly at variance with each other, and that we can draw no safe conclusions from what they have done. Are we, then, to repeat their experiments? God forbid! that would only render confusion worse confounded. No; if we wish to get at the truth in this matter, we must simply carefully observe the symptoms of patients suffering from disease of the brain during life, and compare these symptoms with the lesions detected in the cerebral substance after death; that is the only sure and safe guide to the truth, and it is to it that we owe all that we know FOR CERTAIN now of the localisation of the functions of the brain.

Speaking on this point, Charcot says: "The only really decisive data touching the cerebral pathology of man are, in my opinion, those developed according to the principles of the *Anatomico Clinical Method*. That method consists in ever confronting the functional disorders observed during life in man, with the lesions discovered and carefully located after death. To this method, I may justly say, WE OWE WHATEVER DEFINITE KNOWLEDGE WE HAVE OF BRAIN PATHOLOGY." He adds, "As for the localisation of certain cerebral functions, this method is not only the best, but the only one that can be employed." Again, Dr. Laborde, Professor of Practical Physiology, Paris, says: "The first victory of science over the impenetrable mysteries of the nerve functions—that most brilliant victory, the discovery of the exact seat of aphasia—was the result of bed side experience, which alone could accomplish it." He adds, "The study of this organ, the brain, if it is to bear fruit, MUST BE MADE ON MAN." Ferrier himself adds, the decisive settlement of such points must depend mainly on careful clinical and pathological research. "Experiments have led to different results in different hands."

Dr. MacEwen, of Glasgow, located and operated on cases

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\* See Hermann's "Human Physiology," translated by Gamgee.



of brain disease with extraordinary success, guided only by observation at the bed side and *post mortem* examinations, before Ferrier's experiments were heard of; and Herman Ludimar, Professor of Physiology in the Zurich University, after experimenting on dogs, says, "The best method of investigation which is possible is the observation of cases of disease in the human subject in which the exact nature of the lesions is accurately ascertained after death." Again, Professor Charcot points out in his "*Lecons sur les Localisations dans les Maladies Cérébrales*," that "The utmost that can be learned from experiments on the brains of animals is the topography of the ANIMAL brain, and that it must still remain for the science of HUMAN ANATOMY AND CLINICAL INVESTIGATION to enlighten us in regard to the far more complex and highly differentiated nervous organization of our own species; and, in fact, it is from the department of clinical and *post mortem* study that so far all our best data for brain localisation have been secured." Again, "Painstaking and thoughtful observers of cerebral diseases in man were actively and fruitfully at work in this direction more than ten years before the experimenter had sacrificed a single animal to the quest, and it has been repeatedly pointed out by those who are qualified to judge, that Nature continually presents us with ready-made experiments of the most delicate and suggestive kind, impossible for mechanical artifice to realise, on account of the conditions under which artifice must necessarily work."—(See Kingsford in *Science*, a monthly journal, for Feb. 7th, 1884).

#### THE ANTISEPTIC TREATMENT OF WOUNDS.

It is true that Sir Joseph Lister (in his evidence before the Royal Commission) stated that he had made experiments on animals in connection with his antiseptic system: but it is not true that such experiments have resulted in benefit to the human race, or that the antiseptic treatment of wounds is in any way due to such experiments. On the contrary, as Mr. Lawson Tait has pointed out, Sir Joseph's experiments with carbolized catgut as a ligature for arteries, while answering admirably in the horse and calf, failed miserably when tried on human beings, and "has cost many lives;" while the treatment of patients with antiseptic dressings was carried out in the wards of the Infirmaries of Edinburgh, Glasgow, and London, upon patients suffering from all kinds of wounds, bruises, and putrefying sores. Such investigations were, without doubt, perfectly legitimate; were on right lines; and to them is due, and not to vivisection, all that we know of the antiseptic system. As to Hunter's treatment of aneurism, this was adopted, as Sir James Paget has pointed out (see Hunterian Oration, 1887), "Not as the result of any laborious hy siological induction (experiments on animals); it was

mainly derived from facts very cautiously observed in *the wards and dead-house*."

Von Graefe assured me himself that he was led to adopt his treatment for glaucoma by noticing that eyes on which he had operated for artificial pupil, became softer in consequence of that operation. He said nothing whatever about experiments on animals, and I do not believe that he made any until he had tested and proved his operations on the patients in his Augen Clinique. Those detailed in the *Times* are so manifestly superfluous, clumsy, and apt to mislead, that I need not say anything more with regard to them.

Galvani's discovery of electricity was due to experiments on dead frogs—"dalle morte rane"—not on living animals; vivisection had nothing whatever to do with it. The anæsthetic properties of ether and chloroform were discovered by experiments upon human patients, not by vivisection of animals. Koch's inoculations with tubercle, which were adopted from experiments upon animals, have led to death from initial fever, the infection of the whole system of patients who merely suffered from localised disease, and to failure and terrible disappointment of patients subjected to it. Vivisection was not needed for the discovery of the properties of nitrate of amyl, nor indeed, so far as I can make out, of anything else; and, after all, "It is not whether such and such a discovery was made by vivisection, but whether vivisection was indispensable to that discovery?" If there are any such discoveries, either made or to be made, I must candidly confess I do not know of them; in fact, if anything could exceed the hideous cruelty of the whole business, it would be the childish absurdity of the claims to benefit which are constantly put forth by the advocates and promoters of the system.

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NOTE ON ANTHRAX.—The health and vital powers of the animals subjected to real inoculation are so depressed, that they die in very large proportion from various other diseases from which non-inoculated animals are free. This statement is founded upon experiments which were carried out in Buda-Pest and Kapuvar, in the report of which, quoted by Surgeon-general Gordon, I find the following:—"We cannot overlook the fact that after protective inoculation the deaths in which *post mortem* examinations indicated other diseases, such as pneumonia, pericarditis, catarrh, distoma strangulus, and other diseases, occurred exclusively amongst the inoculated animals, and from a practical point of view it is pretty much the same whether the loss be caused by anthrax or other diseases." Professors Koch and Klein and the Hungarian Commission have already unequivocally condemned the system, and Professor Peter, the well-known successor to Trosseau, declares that it is high time to raise a cry of alarm, and take steps to stop a practice which is indefensible in theory and disastrous in results.

# FOR PITY'S SAKE.

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A PAPER READ AT THE NATIONAL ANTI-VIVISECTION  
CONFERENCE, NOTTINGHAM, NOVEMBER 29TH, 1893.

BY

CHARLES BELL-TAYLOR, M.D., F.R.C.S.E.,

*Hon. Surgeon Nottingham and Midland Eye Infirmary, &c.*

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DR. CHARLES BELL-TAYLOR had a hearty reception on coming forward to read his paper, of which the following is the full text :—

“And David said, the man shall surely die, not because he hath done this thing, but because he had no pity.”

Ladies and Gentlemen,—

The practice of cutting open living animals, literally the practice of dissecting them alive in the supposed interests of science, which is called vivisection, is in my judgment to be condemned.

*First*—Because there is really no necessity for it.

*Second*—Because it has been proved to be not only useless, but misleading.

*Third*—Because it takes the place of other methods of study and observation which are infinitely preferable and to which no one can possibly object ; and

*Fourth*—Because it is a gross and cruel abuse of the power which God has given us over the lower animals, and virtually a surrender of our chief claim to mercy for ourselves.

“Mercy to him that shows it is the rule  
And righteous limitation of its act,  
By which heaven moves in pardoning guilty man ;  
And he that shows none, being ripe in years,  
And conscious of the outrage he commits,  
Shall seek it, and not find it, in his turn.”



Let me consider these points a little in detail, and first with regard to the necessity. Probably no man living is called upon to perform surgical operations of a peculiarly delicate and trying nature more frequently than I am myself ; and if vivisection were necessary for the education of a surgeon, I should have been compelled to resort to it. I have not found it necessary to do so, indeed I have never felt any inclination to do so, and what is true of myself is true also of the most eminent surgeons, and of the most eminent physicians ; while with regard to the general practitioners of medicine and surgery they are almost without exception entirely innocent of the practice. Where then is the necessity for vivisection ? It is clearly not necessary for the education of a surgeon ; it is not necessary for the education of a physician ; and it is not necessary for the education of a general practitioner of medicine and surgery. What then is it necessary for ? The scientific gentlemen who have recently been lecturing us in this town informed their hearers that vivisection was necessary in the interests of the human race ; but these gentlemen and their predecessors and disciples have been vivisecting animals now for upwards of two thousand years without the slightest benefit to the human race, and Claude Bernard, the chief apostle of the system, after a lifetime spent in this gruesome business, protested that his hands were empty ! They were empty ! Of course, their hands are always empty ; it is all promise, no performance, and constant iteration of statements which are calculated to mislead. For instance, there is not a word of truth in the oft-repeated assertion that Galvani discovered the properties of electricity by vivisection. Galvani's discovery was due to accident and careful observation of the effects of electricity on a dead frog ; vivisection had nothing whatever to do with it. It is not true that Harvey discovered the circulation of the blood by vivisection. Harvey's discovery was entirely due to his observation of the fact that the valves of the veins in the dead human body permitted the blood to flow only in one direction ; vivisection had nothing whatever to do with it. It is not true that Hunter was led to the adoption of his treatment for aneurism by experiments upon animals. Hunter was led to the adoption of his treatment solely by observation of the fact that the artery in close vicinity to the aneurism was frequently too diseased to bear a ligature, hence he thought it wise to place it further off. Vivisection had nothing

whatever to do with it.\* It is not true that Pasteur has discovered a cure for hydrophobia. Pasteur does not cure hydrophobia, he gives it, and it is a fact that the deaths from hydrophobia have increased both in France and in England ever since he adopted his supremely ridiculous system of inoculating people with it. It is not true that Pasteur has discovered a cure for anthrax. Pasteur does not cure anthrax, he gives it, and his system has been condemned by the English, the German, and the Hungarian Commissions, who have sat to consider it, while the loss to France is to be counted by millions ever since his system was adopted in that country. It is not true that Koch has discovered a cure for consumption; on the contrary, his inoculations have led to deaths from initial fever, and the infection of the whole system of patients who merely suffered from localised disease. It is not true that Simpson discovered the anæsthetic properties of chloroform by experiments on dogs; Simpson experimented upon himself. Chloroform is so fatal to dogs that if he had tried it first on these animals he would never have tried it on man. It is not true that Lister was led to the adoption of his antiseptic treatment of wounds by vivisection. Antiseptics were used in the treatment of wounds long before his time, and his experiments were made upon the wounds, bruises, and putrefying sores of patients in the hospitals of Edinburgh, Glasgow, and London. It is not true that the great advances in medicine and surgery are due to experiments upon animals, they are due to the discovery of anæsthetics and to the use of antiseptics; vivisection has had nothing whatever to do with them. It is not true that we owe our knowledge of drugs to experiments upon animals. The effect of drugs upon animals is so entirely different from their effect upon man that no safe conclusions can be drawn from such investigations. And it is not true, notwithstanding assertions to the contrary, that Ferrier had succeeded in localising the functions of the brain by experiments on monkeys. Ferrier himself says: "Experiments on animals, even on apes, often lead to conclusions seriously at variance with the well-established facts of clinical and pathological observation." The editor of the *Lancet* says: "If Ferrier's suggestions are to be acted upon cerebral localisa-

\* Sir James Paget has remarked, "This was not the result of any laborious physiological induction (*i.e.* experiments upon animals), but it was mainly derived from facts very cautiously observed in the (hospital) wards and in the deadhouse."



tion will have more deaths to answer for than lives to boast of ;” and the editor of the *Medical Press and Circular*, “ If such cases (prospecting for brain tumours) prove fatal, the jury must give a verdict against the surgeon who operates.” Charcot and Pitrés in France, Hitzig and Heymann in Germany, Luciani and Tambourini in Italy, and Schäfer and Goodhart in England, all differ from Ferrier’s conclusions, and also among themselves ; while Professor Munk, a great vivisector himself, declares, “ that Ferrier’s certainty in his own results is only equalled by the impossibility of the slightest faith being placed in any of these results by any one who examines his researches.”

What more can I say ? what more condemnatory of the system could possibly be said ? It is the old, old story ; blood, agony, and slaughter, leading only to doubt, uncertainty, and contradiction. We are told, nevertheless, that if it is right to kill animals for food, it is right to experiment upon them in the interests of science ; but we are compelled to kill animals for food, we are not compelled to vivisect them, and nothing, absolutely nothing, to my mind, can justify deliberate cold-blooded and prolonged torture of any of them. Our physiological colleagues assure us that they do not torture animals, that their victims are profoundly insensible when they commence operations, and profoundly insensible during the whole of the process, even though it lasts for hours, and if this were true, and if the animal were killed before consciousness returned, we should have very little to say. But it is not true. Two thousand four hundred and eighty-six experiments under licence were performed in this country alone during the last year, 1892, upon animals who were not insensible—that is without any anæsthetic at all—and it is impossible to give anæsthetics in some of the most cruel of all the experiments to which these poor creatures are subjected. How is it possible, I would ask, to give chloroform when chloroform would vitiate the result of the experiment, as in the most cruel operations which have been performed upon the livers of dogs in the Edinburgh University over and over again ? How is it possible to give chloroform to dogs and other animals who are chased up and down a long corridor till they drop dead of fatigue ? How is it possible to give chloroform to animals who are shut up in a tormenting machine and there subjected to every conceivable form of agony merely to



ascertain how much actual pain, without serious lesion, it will take to kill them? How is it possible to give chloroform to a dog who is being slowly baked to death in an oven, who is being crushed in a machine by such an excess of atmospheric pressure that it becomes as stiff as a log and its brain runs like cream? How is it possible to give chloroform to a dog while subjected to such powerful electric currents that its temperature rises to 112, and it dies, though packed in ice, after days of agony, literally seethed in its own vital fluids? How is it possible to give chloroform to a dog who is being drowned and brought round again and again, suffocated and allowed to recover, and then suffocated again; packed in ice until frozen stiff, and, if it survives, then packed again or used for other experiments; starved to death by absolute deprivation of food and water, or killed by the slow torture of inoculation with all sorts of filthy and abominable diseases? Again, what use can chloroform be to dogs, even if given at starting, who are plunged into boiling water and kept for days afterwards; soaked in turpentine and then set fire to; who survive after having their brains half sucked out; or who are skinned alive and kept alive as long as possible afterwards? Besides, in using an anæsthetic when experimenting upon animals, it is essential not only that the animal should be rendered insensible often for hours, but also that it should *be kept alive*, and we have no anæsthetic that will do this. Curare only aggravates the suffering, morphia does not prevent feeling, ether is most difficult of administration, and chloroform is fatal in such a large proportion of cases that it is impossible to use it conscientiously. The evidence on this point, both before the Royal Commission and elsewhere, is most conclusive. For instance, Professor Pritchard, of the Royal Veterinary College, a gentleman who has had more experience with regard to dogs than any man living, said, "I should never think of applying chloroform to dogs at all; I should think it very unsafe to do so. The animal appears not to be under its influence, then it suddenly comes under it, and you find it impossible to bring it round." Dr. Lewis, Professor of Pathology in the Army Medical School, laments that chloroform is so fatal to rats, rabbits, and young dogs, and even to large healthy dogs. Dr. Steinberg, in his *Manual of Bacteriology*, warns us that chloroform is fatal to rabbits, and the extreme danger of using chloroform to dogs was dwelt

upon at the meeting of the National Veterinary Association in July this year, Mr. Hoare pointing out that respiration ceased without any warning, and that the animal died so suddenly that syncope appeared to be the cause. The practical consequence of this (as the late Dr. Hoggan, himself a trained vivisector and assistant in laboratories both at home and abroad, has pointed out) is that complete and conscientious anæsthesia was seldom even attempted ; at most a slight whiff of chloroform was given to satisfy the conscience of the operator, or to enable him to make statements of a humane character, an assertion which was corroborated by Dr. S. Haughton, who, after experience of vivisection, gave evidence before the Royal Commission to the same effect. He said, " I know the practice is to use the anæsthetic very imperfectly, and when the controlling eye is gone to drop the use of it altogether," a statement which is again corroborated by Dr. Walker, who says " It is true that anæsthetics are given, but if you suppose that the animal is insensible throughout it is the greatest delusion that ever was." And so it is ! It is needless to dwell upon this point ; there are the facts, and I say in the face of such facts it is childish and absurd to pretend that animals may be easily and safely rendered insensible for hours while the most difficult, laborious, and delicate dissections are practised upon them.

I beg of you, therefore, to note, first, that last year in this country alone 2,486 experiments were performed without any anæsthetic ; second, that it was impossible to use anæsthetics in many of the most cruel experiments to which the animals were subjected ; third, that in the burning, boiling, and skinning alive experiments, as also in various operations, it is possible to use anæsthetics only at the commencement of the operation ; that the animal goes to sleep, if it does go to sleep, in health and ease to awake in torment that can only end with its most wretched life ; fourth, that we possess no anæsthetic that will keep animals perfectly insensible for prolonged periods without destroying life ; and that consequently anæsthetics are useless or next to useless for annulling pain in the prolonged operations to which they are subjected. What then is to be done ? If science is to be advanced, is it likely that we shall be benefited by the organisation of the Institute of Preventive Medicine—that new chamber of horrors with living exhibits ? I, for one, do not think so ! Or by the

endowment of Chairs of Research, as they are called, which make vivisection instead of a temporary expedient or inquiry into a matter of momentary importance, a daily routine which must be gone through just like any other business, however objectless it may be? I do not think so! Are our youths likely to be benefited when such a course of laboratory instruction is, as is proposed, made compulsory? I do not think so! We are taught to love mercy as a prime duty, and one of our best poets has remarked:—

“ Ye, therefore, who love mercy teach your sons  
To love it too. The springtime of our years  
Is soon dishonoured and defiled in most  
By budding ills that ask a prudent hand  
To check them. But, alas! none sooner shoots  
If unrestrained, into luxuriant growth  
Than cruelty, most devilish of them all.”

What then is to be done? Is anything to be done? Can anything be done towards the advancement of science if we abandon vivisection altogether in this country? Certainly there is a better way, a way which lies open to all. We require no Institutes; no animal laboratories; no cruelty; no sham anæsthetics; no scientific instruments to make torture easy. We do not need to make this earth a hell to God's innocent creatures. Our way is plain; our course is clear; we have only to look at what is going on around us every day of our lives; we have only to cultivate the faculty of observation—observation at the bedside and after death—that glorious gift which taught Newton the law of gravitation, which has revealed to us the secrets of the heavens, which has enabled us to predict years in advance the course of the stars, and to which we owe all that we really do know of the physiology and pathology of the human body to-day. As Sir Charles Bell has remarked, “ Experiments have never been the means of discovery, and a survey of what has been attempted of late years in physiology will prove that the opening of living animals has done more to perpetuate error than to confirm the just views taken from the study of anatomy and the natural motions.” “ The first victory of science,” says Dr. Laborde (mark you, the Parisian Professor of Physiology), “ in the impenetrable mysteries of the nerve functions, that most brilliant victory, the discovery of the exact seat of aphasia, was the result of bedside experience, which alone could



accomplish it," an observation which is entirely confirmed by Professor Charcot—who was certainly not an Anti-vivisectionist—who says, "The only really decisive data touching the cerebral pathology of man are those developed according to the anatomico-clinical method. This method," he adds, "consists in ever confronting the functional disorders observed during life in man with the lesions discovered and carefully localised after death, and to this method," he says with emphasis, "we owe whatever definite knowledge we have of brain pathology to-day."

That, then, is our function, simply the cultivation of the faculty of observation. The proper study for mankind is man, and if a doctor is to learn his business it must be at the bedside of his patient. Nature is for ever performing for us experiments of the most delicate and suggestive kind, experiments which, as Dr. Kingsford has pointed out, it is impossible for mechanical artifice to imitate or realize, and it is to the careful observation of the symptoms in such cases during life, and to the careful study of the lesions that accompany them after death, that we must look for such advance as is possible in the science of medicine and surgery to-day. That is the true method of study, the only fruitful method, the only method which will pay us for our pains ; and I am convinced that those who abandon it in the hope of finding a royal road to fame and fortune by torturing animals, are not only wasting their time and laying up for themselves an old age of remorse, but, like the man with the muck-rake, they are actually turning away from the crown of glory which awaits them in the path of legitimate study. (Applause.)

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FOR THE PROTECTION OF ANIMALS FROM VIVISECTION.

THE  
FUTILITY  
OF EXPERIMENTS WITH DRUGS  
ON ANIMALS.

BY  
EDWARD BERDOE,

LICENTIATE OF THE ROYAL COLLEGE OF PHYSICIANS (EDIN.); MEMBER OF THE  
ROYAL COLLEGE OF SURGEONS (ENG.); LICENTIATE OF THE SOCIETY OF  
APOTHECARIES (LOND.); MEMBER OF THE BRITISH MEDICAL  
ASSOCIATION; GOLD MEDALLIST IN MEDICINE, AND  
MEDICAL SCHOLAR OF THE LONDON  
HOSPITAL; ETC., ETC., ETC.

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## THE FUTILITY OF EXPERIMENTS WITH DRUGS ON ANIMALS.

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IN Mr. Erichsen's Annual Report and Return showing the number of experiments performed upon living animals during the year 1887, under licenses granted under the Act 39 & 40 Vict., c. 77, we find the following statement:—

“ The Therapeutical experiments are 280 in number. These have been made, in the case of new drugs, either with the view of justifying the further extension of such remedies to man, or of enlarging their present sphere of usefulness ; in the case of some of the old drugs, with the view of inquiring whether their action is such as to justify their continued administration for the purposes for which they have hitherto been used. The experiments consisted chiefly of hypodermic injections, and were mostly of a painless character.”

We may divide these remarks into those which apply to *New Drugs*, and those which refer to *Old ones*.

Of the *New Drugs*, the Inspector says that the experiments have been directed with the view of—

( $\alpha$ ) Justifying their further extension to man, or

( $\beta$ ) Enlarging their present sphere of usefulness.

With respect to the *Old Drugs*, he says that the experiments have been conducted to ascertain whether their action justifies their continued use for the old purposes.

He adds that the experiments were mostly performed by inserting the drugs in solution under the skin, as morphia and other drugs are frequently injected in medical practice ; he

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further states that these injections were mostly painless. Whether this latter statement is the fact or not will be shown in the course of our inquiry.

It will be found very instructive and interesting to bestow careful attention to what is really involved in these apparently matter-of-fact remarks, and to endeavour to ascertain what we are committed to, if we accept these investigations at the value herein sought to be claimed for them. We propose to show by a careful examination of the works of the most eminent experimental physiologists and medical writers, and for the most part in the words of one set of experimenters commenting on the proceedings and conclusions of another set—what is the real scientific value to be attached to

- 1st. The physiological action of drugs used in medicine when tested upon various animals.
- 2nd. The physiological action of a drug as compared with its clinical action.

The reader will be in a position to judge for himself how far it is safe and wise to extend to man any sort of medicine upon this system of arriving at the nature of its action. He will be enabled also to judge how far it is wise to discard a medicine which has proved itself of definite clinical value, because it has failed to pass satisfactorily the ordeal of an examination in physiology !

The method adopted in these pages will be to take the principal drugs and chemicals which are used in the practice of medicine, and compare and contrast their action on the different species of animals upon which they have been tried, both with each other, and upon man. Some very remarkable differences will be found to exist in these effects, differences which will serve to illustrate the contention that this method of investigating the properties of medicines is both misleading and unscientific. It has long been a familiar fact to those who protest against the practices of vivisection, that there are

several drugs which are deadly poisons to man which are eaten with impunity by goats, rabbits, and other mammals ; for instance, goats eat hemlock, and take no harm ; rabbits devour belladonna with impunity ; pigeons are not affected by doses of opium strong enough to kill a man. These and a few other stock illustrations are well known to all who take an interest in the vivisection controversy, and the physiologists, like Dr. Lauder-Brunton, have endeavoured to explain away the difficulties connected with the diverse action of these poisons in men and animals.

It has been considered advisable to bring together the whole of the *materia medica* in which these different actions are most clearly shown, and to present the evidence of eminent authorities, both English and foreign, which tends to show how vain a thing it is to expect to find out remedies for our own diseases by experiments upon animals which are not constituted as we are, and which frequently find their food in things which would be fatal to mankind.

Medical progress does not, and cannot, lie this way. It was not thus that Paracelsus blessed the world with his opiates and his mercurials ; not thus that the Jesuits discovered the virtues of Cinchona bark with its active principle, quinine ; not thus that Simpson brought us the heavenly boon of chloroform ; not thus that any one good thing in the armamentaria of the physicians has found its way thither. Mr. Lawson Tait has most ably done for the surgical what I hope to do for the medical side of this important question ; and I shall confine my attention therefore to the consideration of the therapeutical value of experiments with drugs upon animals and men. The drugs will be taken in the alphabetical order of their common English names for facility of reference, and the Latin or pharmacopœia names will be appended ; then a short explanation of their action upon animals and human beings will follow, with the opinions of the experimenters in parallel columns.



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**Aconite** (*P. B.*)—This plant is known by country people as Monk's-hood. Dr. Ringer says:—"Perhaps no drug is more valuable than aconite." An alkaloid is prepared from it which is termed *aconitia*. It is one of the deadliest of the vegetable poisons; yet Linnæus says that the plant, when dried, is eaten by horses without injury (*Pratt's Flowering Plants of Great Britain*, Vol. 1, p. 46). Different experimental pharmacologists have arrived at quite diverse conclusions as to the action of *aconitia* upon the nervous system of the various animals which they have poisoned with this drug. Some of their cruel experiments with the alkaloid, which causes the most irritating and burning effects, are termed by the operators "very complete and beautiful investigations." Rabbits were caused by it "to jump vertically in a very peculiar manner, and often to squeal piteously," then to fall into "severe convulsions." Dogs, however, remained without a quiver, but horses were convulsed. (*St. Thomas's Hospital Reports*, V.)

Achscharumow says that in frogs *aconitia* produces at first a reduction in the number of the heart's pulsations, then an increase in the rapidity of its action. — (*Reichert's Archiv*, 1866, p. 255.)

Achscharumow argues that the slowing of the pulse during the early stage of aconite-poisoning is due to stimulation of the inhibiting centres in the medulla oblongata.—(P. 272.)

The most diverse conclusions have been arrived at by different vivisectors as to the action of

Lauder-Brunton says: "The heart in the frog is first quickened and then slowed. In man or mammals there is first slowness of the pulse, but shortly before death it may become more rapid."—(*Pharmacology*, p. 750.)

Böhm and Wartman repudiate this conclusion.—(*Loc. cit.*, p. 266.)

"Later investigations have, however, clearly shown that some fallacy exists in the studies of Achscharumow." — (*Wood*, p. 174.)

Lauder-Brunton says (p. 750): "The motor centres of the spinal cord, and the respiratory and

aconitia upon the nervous system. Achscharumow says that the spinal cord is not affected.—(Wood, p. 174.)

vasomotor centres in the medulla appear first to be slightly stimulated, so that clonic convulsions may occur, the reflex power of the cord is diminished.”

Ringer and Murrell (*Journal of Physiology*, I., Nos. 4 and 5) deny the accuracy of the delicate experiments of Liégeois and Hottot.

Experiments by Mackenzie upon frogs have yielded apparently contrary results to those of Böhm and Wartmann as to the effect of aconite upon these animals.—(Wood, *Therapeutics*, p. 177.)

MM. Gréhaul and Duquesnel, writing in *L'Union Pharmaceutique*, August, 1871, communicated to the French Academy some experiments upon frogs with aconitia. Wood says (p. 177) “that their results are so strikingly different from those of other experimenters as to indicate the existence of some fallacy.”

Dr. Ringer says (*Hand Book of Therapeutics*, p. 397, 5th Edition) that “very diverse statements are made concerning its action on the nervous system.”

The literature of the subject teems with the opposed statements of the physiologists on the action of aconite upon the animals and men experimented upon with this poison. Yet Dr. Lauder-Brunton says that our objection to the value of such experiments is due to ignorance. “Almost all our exact knowledge of the action of drugs on the various organs of the body, as well as the physiological functions of these organisms themselves, has been obtained by experiments upon animals.”

Ignorance cannot be Dr. Brunton's excuse for this astounding statement !

**Alcohol.**—Alcohol is used in medicine as a cordial stimulant. Physiologists are much divided in opinion as to the way it acts upon man and animals. Dr. Zimmerburg, experimenting upon cats, said it *lowered the pulse rate*. Dr. Wood

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says that he thinks "there must be some fallacy underlying" these experiments. There generally is! Our daily experience of the influence of alcohol upon the pulse proves that in this instance there must be a fallacy. The action of various kinds of alcohol as brandy, whisky, rum, wine, and beer is physiologically different. Dr. Stillé says (p. 1,347): "It is one of the unfounded claims of science that chemicals of apparently the same composition are identical in their action; for experience daily shows that physiological effects cannot be predicted upon chemical grounds alone. The action of whisky, both immediate and remote, differs in many respects from that of brandy."

Böcker says that alcohol lessens the amount of carbonic acid gas exhaled. — (Claude Bernard, *Journal de Pharmacie*, Com. xv., 3rd series, 1849.)

Böcker also experimentally determined that alcohol lessens the excretion of urea.

MM. Lallemand, Duvoy, and Perrin assert that alcohol escapes unchanged from the body.

Dr. E. Smith found that alcohol *increases* the elimination of the gas.—(*Wood*, p. 121.)

Parkes and Wollowicz affirm that their experiments gave an exactly contrary result.—(*Wood*, p. 122.)

Baudot (*L'Union Médicale*, 1863), seriously questions these results, and declares that after twenty experiments he finds that the alcohol eliminated by the kidneys practically amounts to nothing.

Dr. Ringer says:—"Observations on the influence of alcohol on the blood and organs have yielded contradictory results, the most recent and elaborate investigations of Parkes and Wollowicz clashing in most particulars with those of previous experimenters."—(*Therapeutics*, p. 274, 5th Ed.)

Dr. Ringer (himself a well-known experimenter) admits that "as physiology fails to guide our steps amid these



conflicting statements 'we must rely solely on experience.'"  
—(*Therapeutics*, p. 277, 5th Ed.)

**Alkalies.**—Such as *Bicarbonate of Soda*, *Bicarbonate of Potash*, *Citrate of Potash*, *Acetate of Potash*, and other well-known drugs. Writing of these, Dr. Ringer says:—  
“We may here introduce a short summary of some interesting experiments made by Dr. Paul Guttman (on the lower animals), which confirm many of the conclusions arrived at by Claude Bernard and others on the action of potash and soda salts. *The results are singular, and scarcely in accordance with the experience of medical men of the action of these substances on the human body.*”—(*Therapeutics*, p. 127, 5th Edition.) As showing how difficult it is for physiologists, with all their unfettered opportunities of experiment upon living animals, to interpret correctly the phenomena they produce, we may note in this connection that these investigators, though agreed that the potash salts in large doses arrest the action of the heart, are at variance as to the process by which this is effected.

Traube (says Dr. Ringer, *Ib.*, p. 127) asserts that the action on the heart is effected through the vagi nerves.

“This view Guttman (another vivisector) considers erroneous, as after the vagi nerves were both divided and the medulla removed, the potash salts still affected the heart as before, and even when the vagi were paralysed by woorali (curare) the potash salts still acted as usual on this organ.”—(*Ringer*, p. 127.)

**Ammonia, Acetate of (*P. B.*)**—*Mindererus Spirit*, a well-known household remedy for colds. Stillé and Maisch say:—“Experiments upon animals show that this preparation in large doses affects them energetically; in rabbits, causing fatal tetanic spasms and dissolution of the gastric mucous

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membrane. Given to healthy men, it does not appear to occasion any decided symptoms.”—(*National Dispensatory*, p. 836.)

**Ammonium, Chloride of** (*P. B.*)—*Sal Ammoniac*. Dr. Smith (quoted by Stillé) applied two drachms of chloride of ammonium to the wounded thighs of dogs, and thereby caused their death in from 12 to 36 hours.—(*Wood's Therapeutics*, p. 526.)

Orfila introduced the same chemical into the stomach of a dog, causing it to die in violent convulsions and spasms.

Arnold found that 30 grains would kill a rabbit in 10 minutes.

Dr. Rabateau (*L'Union Médicale*, 1871, p. 330) injected the same drug into the veins of dogs with no apparent effect.

Sundelin and Böcker (*Beitrage zur Heilkunde*, Bd. ii., p. 170) and other experimenters say that chloride of ammonium impoverishes the blood.

Wood says (*Materia Medica*, p. 527) that “although I have given the drug very largely and freely,” he has not found evidences of this action.

**Amyl, Nitrite of** (*P. B.*)—The use of this drug in medicine is declared by the Vivisecting School to be a brilliant example of the benefits conferred upon humanity by experiments on animals. It was discovered in 1844, by the French chemist Balard. In 1865, Dr. Richardson introduced it to the profession. Guthrie had previously observed its action in causing flushing; indeed, it would be impossible for anybody who had ever had a sniff of the drug to avoid observing this action. Some years later—that is to say, after all its clinical virtues had been well ascertained—Dr. Gamgee, by experimenting upon animals, demonstrated that Nitrite of Amyl lessened the blood pressure in the vessels; in other words, it dilates the capillaries, which is a pretty scientific way of saying it causes intense flushing. Every doctor who used the drug, on the recommendation of Dr. Richardson, must have known all

this. "Animal torture was unnecessary," concludes Dr. McCormick, Deputy-Inspector of Her Majesty's Hospitals and Fleet, after remarking that the use of Nitrite of Amyl for the relief of spasms of the heart "could have been very readily arrived at by letting a patient inhale its vapour." But so simple a process would not suit our physiologists, and, in sooth, would not make much of a paper to read before a learned society. So dogs, rabbits, and other animals were used, upon which to *demonstrate* phenomena which had already been observed by clinical methods. It is not true, therefore, that the discovery of the uses of Nitrite of Amyl was due to experiments upon animals though it is the fact that they were demonstrated by such means. But experimenters are not in perfect accord as to the interpretation of the phenomena which they observed in this way.

Wood says (p. 347): "An interesting question which here arises is, whether the dilatation is centric or peripheric. I believe it must be peripheral and not centric, in its origin, since both in my own experiments, and in those of Brunton, it occurred after the arterioles had been separated from the vaso-motor centres by division of the cord."

Mark the reply of the other vivisectors to all this. Wood says (p. 348), "The answer to these results is, *that opening the chest must derange most profoundly the pneumonic circulation* (just what we have always protested with all our might), and that all observations upon

Bernheim, however, asserts that this cannot be so, and that the dilatation must be solely due to an action upon the vaso-motor centres, because he found that galvanisation of the cervical sympathetic still caused contractions in the vessels of the ear of a rabbit, to which nitrite of amyl had been given. As pointed out by Pick (*Centralblatt, Med. Wissen.* 55, 1873), Bernheim's experiment does not warrant his conclusion.

Dr. W. Filehne (*Pfluger's Archiv*, p. 478, Bd. ix.) dissents from the view here taken. . . . Filehne affirms that when to the animals whose lungs were exposed (that is to say, whose chests were cut open) inhala-



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the comparative size of vessels are very apt to be mere guess-work when the change is slight."

In Schuller's experiments (*Berlin. Klin. Woch.* 25, 1874) after destruction of the cervical sympathetic in a rabbit, inhalation of the nitrite produced still further dilatation of vessels in the ear.

tions of the nitrite were given, the change of colour was not nearly so great as in the ears, and that if the sympathetic had been destroyed in the neck in a rabbit, and the nitrite of amyl exhibited, the vessels on the unwounded side actually became larger than those of the opposite ear."—*Wood*, p. 348.

In a rabbit experimented on by Dr. Hoffman, a hypodermic injection of this drug caused diabetes, but experimenters with the same drug on human beings have not detected this result.

**Apomorphia.**—This is an alkaloid prepared from morphia. It is used in medicine as an emetic and expectorant. Doctors using this drug for these purposes have found that in young subjects very considerable depression has been produced by it, with dangerous symptoms of paralysis of the heart. But Siebert and Moerz, experimenting with the drug upon animals, say that these facts are contradicted by their physiological observations, as they find that apomorphia does not affect the blood pressure, and that the pulse rises when the emetic effect is produced.—(*Bartholow's Materia Medica*, p. 459.)

Hypodermic injections of this poison in the lower animals elicit no evidence of pain, although in man they have been known to cause intense pain.—(*Wood*, p. 437.)

Quehl says the paralysis produced by the drug must be central, since neither the sensitive nor motor nerves nor muscles are affected by the poison.—(*Ueber die Physiol.*, Halle, 1872.)

Harnack, after experimenting upon frogs which he poisoned with apomorphia, after cutting off their legs, directly contradicts Quehl's conclusions.—(*Archiv. Exper. Pathol.* Bd., ii., p. 291.)

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Moerz says that during the vomiting the temperature rises. (Wood, p. 438.)

Bourgeois declares that in man the drug has no influence on the temperature. — (Wood, p. 438.)

Ziolkowski says the temperature falls during the vomiting. — (Ut supra.)

**Arsenic.**—Drs. Ringer and Murrell (*Journal of Physiology*, I., p. 217) experimented upon frogs with arsenic.

Dr. W. Sklarck, of Berlin (*Reichert's Archiv*, 1866), experimented in a similar manner with this chemical on the muscular and nervous system of frogs, obtaining very different results from those of the English physiologists. These gentlemen endeavour to extricate physiological medicine from this difficulty by saying that the discrepancies in question depend upon the time of year at which the frogs were experimented upon. We do not dispute that this may materially affect the results, but of what avail is it to study the effects of the medical uses of a drug intended for the treatment of man upon a frog's system which behaves in one manner in spring and in a totally different manner in autumn? This confusion illustrates one other of the many fallacies of a system of medicine founded upon any such basis.

**Atropine.**—(See Belladonna.)

**Beberine** (*P. B.*)—An alkaloid, prepared from Bebeeru bark. It causes convulsions and paralysis in dogs and rabbits, yet in man no serious symptoms have as yet been recorded from its use.—(Wood, *Therapeutics*, p. 57.)

**Belladonna** (*P. B.*)—*Deadly Nightshade*.—The root and leaves of the poisonous plant *Atropa Belladonna* contain the alkaloid *Atropia*; it is entirely to this active principle that the physiological action of Belladonna is due. The plant and its alkaloid act much more mildly upon the lower animals than upon man. Its well-known action in dilating the pupil

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of the human eye may instructively be compared with its powerlessness to cause any such effect on the pupils of the eyes of pigeons, or, as Stillé says, of those of other birds.

Birds and herbivorous animals eat Belladonna with impunity. "This is one of the many examples," say those great authorities, Drs. Stillé and Maisch, "which show the danger of concluding from the lower animals to man in regard to the uses of medicines, unless the mode of action in the two cases is first proved to be identical. In no animal is there any degree of that delirious excitement which Belladonna produces in man.—(*Therapeutics*, p. 276.)

Dr. Ringer (*Materia Medica*, p. 454, 5th Ed.) says:—"Certain animals, like pigeons and rabbits, appear to be almost insusceptible to the influence of Belladonna," and "Belladonna, it is asserted, has very little effect on horses and donkeys." So powerful is the action of atropine on the human organism, that it is usually medicinally administered in the very minute dose of from  $\frac{1}{120}$  to  $\frac{1}{40}$  of a grain. Yet Calmus found that no less than fifteen grains are required to kill a rabbit, and Ringer says that two grains administered hypodermically are necessary to kill a pigeon.—(*Materia Medica*, p. 454.)

Meuriot administered atropine to various animals, and then opened their abdomens whilst alive. He declared that the poison caused the intestines to undergo violent contraction.

Bezold and Bloebaum did exactly the same, and they affirm that they found the poison caused marked sedation (calming) in the same organs.

Meuriot and Harley contradict each other upon the results of their experiments on the action of atropia on the secretions of the alimentary canal.

Wood (*Therapeutics*, p. 252) says that none of the experiments seem decisive, and that their results are not in accord with clinical experience.



With respect to the antagonism of Belladonna in cases of opium poisoning, Dr. Erlenmeyer is opposed by Dr. Brown-Séquard and Dr. Harley, who dispute the antagonism, as they say it has not been observed in experiments made on man and the lower animals. To this Dr. Ringer replies: "It must be remembered, however, that these drugs do not similarly affect animals and man."—(*Materia Medica*, p. 469.) Dr. Harley severely criticises the reputed cases of this antagonism, and "his conclusions," says Dr. Ringer, "are in some respects directly opposed to those of Erlenmeyer."

Surely, to any candid and unprejudiced medical man, the lessons taught by this account of the action of Belladonna would alone be sufficient to make him reflect that the anti-vivisectionists may not be such fools after all!

**Benzoic Acid** (*P. B.*)—Cruel experiments with this drug have been performed by different physiologists, with the result, says Wood, p. 531, that their testimony is "singularly contradictory."

**Bromides of Potassium, Ammonia, Sodium** (*P. B.*), &c.—Bartholow, Purser, and Laborde, experimented with the bromides upon the nervous system of different animals, and arrived at certain conclusions, which were promptly contradicted by Darmourette and Polvette, after a similar series of experiments.—(*Wood, Therapeutics*, p. 325.)

**Caffein** (*P. B.*) is prepared from Coffee. Much diversity of opinion exists amongst physiologists as to the action of this drug. A great number of animals have undergone experiments with it, causing violent spasms, convulsions and excitement, ending in death. Dr. Mary P. Jacobi (note that this was a lady experimenter) actually experimented with this potent alkaloid on a patient whose brain was exposed. (See *Stillé's Therapeutics*, p. 312.) Those who experiment with it on frogs note a different action when they use different species of these animals, the action on *rana esculenta* being very different from

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that on *rana temporaria*.—(Lauder-Brunton, *Materia Medica*, p. 72.)

**Calabar Bean** (*P. B.*)—The dried seed of *Physostigma venenosum*. Bartholow and Bourneville experimented with calabar bean, and arrived at conclusions opposite to each other. Indeed, the most conflicting testimony is given by different physiologists as to its action on men and animals. Wood (*Therapeutics*, p. 310) says:—"The researches of Köhler, of Vintschgau, and of Rossbach and Frohlich, are especially open to doubt, on account of their statement that Calabar bean tetanizes." In summing up the evidence of various vivisectioners as to its action upon the vagi nerves, it appears that "no positive conclusion can be reached."

Dr. Harley (*Practitioner*, Vol. III., p. 163) declares that it *does not affect the arteries* when applied locally.

Dr. Fraser, who made 331 experiments with the drug, chiefly on rabbits, contradicts this, and says he has demonstrated that the local application of the drug *produces dilatation of the arteries* (Wood, p. 316).

Bartholow sums up the statements of the conflicting physiologists in these suggestive terms:—"The applications of physostigma to the treatment of disease are by no means so important as the elaborate study given to its physiological action by various observers would seem to indicate."

**Calomel.**—*See Mercury.*

**Camphor** (*P. B.*)—This drug acts differently on different animals. In the articulata it acts as a virulent poison; in birds it causes epileptiform seizures; in mammals it is an intoxicant, causing ultimately convulsions and death. In man, Stillé says (p. 334), "in no instance does camphor seem to have caused the death of a healthy person."

**Camphor, Monobromated.**

Bourneville says, after having performed a number of experiments upon animals with this drug, that it *lowers the temperature, lowers the pulse, and causes sleep.*

Trasbot, in his experiments, says it caused symptoms like those of strychnia.

Trasbot experimented with the same drug in a similar manner upon dogs, and found that it *neither lowered the temperature nor pulse, nor did it cause sleep.*

Valenti y Vico inferred from his experiments that it was an antidote to strychnia.—(*Stillé, Therapeutics*, 336, 2nd Ed.)

**Carbonic Acid Gas.**—The effects of the inhalation of carbonic acid by man do not correspond with those observed in animals. Dogs inhaling this gas in the proportion of 1 part in 9 are thrown into an anæsthetic sleep; but Stillé and Maisch say that in similar experiments on man no such anæsthetic influence is produced. In dogs which have succumbed to a fatal dose, the heart and lungs are found gorged with blood (*Demarquay*). “In the case of a young man who died in this manner in the Grotto of Pyrmont, the lungs were not engorged, and the heart contained very little blood.”—(*Stillé and Maisch*, p. 38.)

**Chloral Hydrate** (*P. B.*)—Experimenters with chloral hydrate contradict each other about its physiological action in the most bewildering manner.

(See *American Journal of Insanity*, July, 1871, and *American Journal of Medical Science*, April, 1870.)

**Chrysophanic Acid.**—Experimenters with this drug do not agree respecting its action. Some declare that it is a purgative, while the greater number assure us that it has no such property. They are equally divided as to the question of its elimination from the system after its exhibition.—(*Stillé and Maisch*, p. 42.)

**Citric Acid** (*P. B.*) is prepared from lemon juice. Physiologists have experimented with it upon cats, rabbits, and other



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animals, with results which should teach medical men how fallacious it is to expect the lower animals to illustrate the uses of medicines proposed to be exhibited on human beings. Citric acid proves to be a powerful poison to these animals; it causes in them the most violent tetanic spasms. In man, however, no spasmodic or any other alarming symptoms ever arise from its use. — (*Stillé and Maisch*, p. 44.)

**Coca Leaves** (*P. B.*)—Physiological experimenters are greatly at variance as to the influence of this plant upon men and animals.

**Coculus Indicus** is a well-known poison used for catching fish by intoxicating them; under its influence they whirl round, and lie motionless on the water. In dogs and other animals it causes muscular tremors, convulsions, and tetanic spasms. It is remarkable that there is no case on record where such effects have been produced on man by this drug. We have cases of stomach irritation, congestion of the brain and death, but no spasmodic phenomena.—(*Stillé, Therapeutics*, 2nd Ed., p. 436.)

**Colocynth** (*P. B.*) has very little action upon horses, sheep, and swine; but it is a powerful purgative to dogs and rabbits, on which it acts violently, causing inflammation of the bowels. Small doses act powerfully on human beings.

**Conia.**—*See* Hemlock.

**Copper, Sulphate of** (*P. B.*)—Atrociously cruel experiments upon dogs have been tried with this poison; given by the mouth it excites violent vomiting, but some physiologists, to prevent this, have tied the gullet, and thereby have caused convulsions and paralysis. Yet Levi and Barduzzi gave a horse daily 15 grains of sulphate of copper for 30 days without injury. An ass was subjected to the same treatment with similar results.

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### **Corrosive Sublimate.**—(*Perchloride of Mercury, P. B.*)—

Drs. Wright and Wilbouche-  
witch (*Archiv de Phys.*, Sept.,  
1874) experimented with cor-  
rosive sublimate upon rabbits,  
and found that it *very greatly*  
*diminished* the number of the  
red blood corpuscles.

Dr. Keyes (*Amer. Jour. Med.*  
*Sci.*, Jan., 1876) did the same,  
and he says that it *increases* the  
number of the red blood cor-  
puscles.

### **Croton Chloral Hydrate.**—(*Butyl—Chloral Hydrate,* *B. P.*)—

This drug was introduced by  
Liebrich, who claimed as the re-  
sults of his experiments that it  
lessened sensibility before it  
produced its narcotic effect.

But the much more elaborate  
researches of J. V. Merino (*Ar-*  
*chiv Experim. Pathl. Pharm.*,  
Feb., 1875) do not bear out  
these assertions.

**Croton Oil** (*P. B.*)—Armand Moreau experimented with  
the intestines of living dogs by cutting them open and putting  
croton oil into them, and obtained opposite results to those  
obtained by M. Thivy, who did the same.—(*Gaz. Med.*, 1871.)

Hertwig and Bucheim (*Vir-*  
*chow's Archiv*, xii., 1) injected  
croton oil into the veins of  
animals, and found that *pur-*  
*gation did not follow.*

Conwell did exactly the same,  
but with a *contrary result.* Stillé  
(*Therap.*, Vol. ii., p. 451) says  
that it will sometimes purge  
human beings even when ap-  
plied externally.

**Currier's Sumach.**—(*Coriaria.*)—This plant is poisonous to  
man. "Snails that had lived on its leaves have poisoned  
those who ate them"—"but rabbits were usually unaffected."  
—(*Stillé and Maisch*, p. 466.)

**Elaterium** (*P. B.*)—This drug, even in very small doses,  
causes in man violent purging, with severe griping, and more  
or less vomiting; "but, however it may be given to dogs and  
rabbits—does not vomit or purge them, but destroys them  
with tetanoid phenomena."—(*Stillé and Maisch*, p. 521.)

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**Extract of Meat.**—Kemmerich arrived at the singular conclusion that concentrated cold extract of horse-flesh injected into the stomach of dogs in large doses is fatal to them, with all the appearances of cardiac paralysis! The experiment does not appear to have yet been tried upon man, but we do not consider that extract of meat is a dangerous poison to the higher animal.

**Fly Agaric, or Fly Fungus** (*Fungus Muscarius*).—This poisonous fungus yields the deadly alkaloid *Muscarine*. In commenting upon a case of poisoning by this fungus, related by Dr. Chevers, Stillé says (p. 664), “in this narrative there is absolutely nothing to suggest, or to be explained by the results of the physiological experiments above described.” They never do explain anything which is of any importance.

Ringer and Morshead found	Schmiedeberg and Harnack
that muscarine <i>dilated</i> the pupil	discovered that it <i>contracted</i> the
when applied locally.	pupil both when applied locally
	and given internally.—(Brunton
	<i>Materia Medica</i> , p. 187.)

**Foxglove Leaves.**—(*Digitalis, P. B.*)—This drug is perhaps the most valuable one which we possess for the treatment of certain forms of heart disease. It has often been claimed by our opponents of the experimental school that its virtues were discovered in consequence of the great number of investigations which have been carried out with it upon the lower animals. But this is a typical case of the confusion so often made between a discovery and its demonstration. “Long before” (we quote from Stillé’s great work, p. 511) “its mode of action had been experimentally investigated, it was established as the most efficient remedy for dropsy depending upon disease of the heart, or upon that form of renal disease which consists of congestion and tubal obstruction.” It is poisonous to plants watered with its infusion. Most animals, the carnivorous more readily than the herbivorous, are poisoned by this agent (*Stillé, loc. cit.*) Great confusion exists amongst



experimenters as to its action upon the heart. Its action upon the kidneys has been studied by numerous observers with diverse results. With reference to its influence on the blood pressure, note the following quotation :—

Boehm, experimenting with digitalis, found that under certain anatomical conditions it does not increase arterial pressure.—(*Wood*, p. 138.)

The rise in blood pressure is regarded by Schmiedeberg, Boehm, and others, as entirely due to increased action of the heart and not to contraction of the vessels.—(*Brunton*, p. 911.)

Ackerman, under precisely similar circumstances, found the direct opposite.—(*Wood*, p. 139.)

With this view I cannot agree, and I still hold to the opinion which I expressed many years ago, that the rise in pressure is due in great measure to contraction of the arterioles.—(*Brunton*, *loc. cit.*)

“According to Saunders, Jörg, Hutchinson, and others, digitalis in moderate doses in the first instance, quickens the pulse, though other observers deny this effect.”—(*Ringer*, *Therapeutics*, p. 411.)

**Friar's Balsam.**—(*Compound Tincture of Benzoin*, *P. B.*)—The history of this preparation is curious and instructive—it was probably invented in a monastery, and was used for centuries, especially for cuts and skin affections. When we began to be hyper-scientific in medicine and surgery, an old-fashioned remedy like this was contemptuously regarded as an old woman's heal-all, and it was relegated to the limbo of forgotten therapeutics except among the poor and ignorant who did not care about fashion and science so long as they were cured. At last Mr. Bryant (*Lancet*, ii., 1876, p. 747) proved in his practice that its great reputation was well founded. “His results” (*Wood*, p. 532) “appear to challenge those obtained by the most complicated antiseptic surgery.” Stillé says (p. 1436), “Those who considered the cure of disease of more consequence than the justification of a doctrine, adhered by its use, and the medicine survived the theory.”

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One of the regular arguments on behalf of vivisection is the claim that Professor Lister discovered the Carbolic Antiseptic system by experiments upon living animals. The plain truth is that perfect cleanliness on the surgeon's part, as Mr. Lawson Tait has proved, will achieve all Mr. Lister's results, especially when supplemented by an antiseptic balsam such as Mr. Bryant uses. But then, as we are not bidden to do "some great thing" with a cart load of apparatus and paraphernalia, we do not believe.

**Gamboge.**—This to man is a drastic purgative, often causing vomiting and griping; in large doses it acts as a powerful irritant, at times causing inflammation and death. (Garrod.) "Experiments upon animals with gamboge do not render its operation clear. It produces few symptoms of local irritation—and not uniformly either vomiting or purging."—(*Stillé*, p. 670.)

**Gelsemium.**—*See* Yellow Jasmine.

**Glycerine.**—Even in so apparently innocent a drug as glycerine this diverse action between men and animals has been observed. When large doses are injected subcutaneously in dogs, death is produced with effects resembling those of alcoholic poisoning, in a period varying—according to the dose—from one hour to several days. (*Dujardin-Beaumetz, and Audijé, Bull Therap.*, xci., p. 62.) In man, says Wood (*Therapeutics*, p. 584), no symptoms of poisoning have ever been produced by glycerine.

Fuchsinger says ( <i>Pflüger's Archiv</i> , xii., p. 501; <i>Centralb. Med. Wiss.</i> , 1877) that in rabbits slightly poisoned with glycerine no sugar appears in the urine after the "diabetic puncture."	The experiments of Eckhard gave, however, a contrary result. —( <i>Centralb. Med. Wissen</i> , 1876, p. 273.)
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"Its richness in carbon suggested its use as medicinal food, and especially as a substitute for cod-liver oil; but, as in so

many other instances, a little clinical experience showed the so-called scientific induction to be untrue. On theoretical grounds, also, it has been used in the treatment of *diabetes*, but without striking advantage.”—(Stillé, *National Dispensatory*, *loc. cit.*)

**Ground Ivy.**—(*Glechoma*.)—This plant is a popular remedy in some places in the treatment of chronic bronchitis, and common colds. (*Ann Pratt's Flowering Plants*, Vol. IV., pp. 197-8.) Harmless to man, it is poisonous to horses and sheep.—(Stillé, p. 682.)

**Guarana.**—Mantegazza, the inventor of a horrible machine for the torture of dogs, which he called the “Tormentatore,” capable of inflicting graduated pain, termed by him according to its degree “intense,” “cruel,” and “most atrocious agony,” experimented with guarana, and found that it excited frogs and threw them into convulsions, that it influenced some warm-blooded animals in a similar manner, but made rabbits dull and languid, and produced a sort of intoxication in dogs. “It is curious,” says Stillé, “to contrast these definite and striking results with those of Dr. Macdowall, of West Riding Insane Asylum. He experimented upon himself and two male attendants, and it soon became evident to him that even in very large doses its effect upon the body in a state of health is almost, if not quite, inappreciable.” Its action in fact is very similar to that of tea and coffee.

**Hamamelis.**—(*Witch Hazel*.)—This is a most serviceable remedy for piles, and for arresting bleeding, yet Drs. Wood and Marshall experimenting with it were unable to obtain any physiological effect.—(*Ringer*, 12 Ed., p. 308.)

**Hemlock Leaves and Fruit.**—(*Conium*, *P. B.*)—Experimenters are much at variance as to the physiological action of *Conium*. Some say that it slows the heart's action, others deny this. Some declare that it increases the temperature of the body, others that it lowers it. One affirms that it renders



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the blood dark and fluid, another protests that it has no such effect. Summing up all these conflicting results, Dr. Stillé says, "These antagonistic results of experiments conducted under determinate conditions illustrate the difficulty of drawing definite conclusions from such data and *the wisdom of preferring clinical bases for clinical rules.*"—(*National Dispensatory*, p. 456.)

Physiological experiments with this as with so many other drugs already mentioned do not in the least help us to understand its action when administered to human beings as a medicine. From hemlock we obtain the alkaloid Conia. Guttman says, this is one of the most active and powerful poisons to human beings, being "scarcely second to prussic acid." "Yet," says Ringer, p. 437, "some vegetable feeders, as the goat, sheep, and horse, are said to eat hemlock with impunity." Can anything be more absurdly unscientific than to test on these animals the action of a drug like hemlock for the discovery of its medical uses to man?

As the natural consequences of such confused pharmacology "concerning the action of this poison on the heart, very conflicting statements have been made."—(*Ringer*, p. 442.)

Dr. Verigo (*Schmidt's Jahrb.*, Bd. cxlix, p. 16) asserts that Conia acts very forcibly on the spinal cord as a *depressant*.

MM. Polvette and Darmourrette (*Archives Gén.*, 6e sér., t. vi., p. 89) say that it acts as an *excitant*.

Verigo, Van Praag, and others affirm that lethal doses of conium cause a decided *lowering* of temperature.

Lautenbach asserts that the drug decidedly *increases* the temperature under similar conditions.—(*Wood*, p. 369.)

What a bitter satire is all this upon physiological medicine!

**Henbane Leaves.**—(*Hyoscyamus*, *P. B.*)—"All parts of this plant are highly narcotic, and it is used in medicine as a substitute for opium." It is poisonous to fowls, hence its name, henbane; yet on sheep, cows, and pigs, it has little or no effect. Hogs also can eat it with impunity. When our readers want to

confound a very positive and rash young physiologist, he may be baited thus: ask him innocently, "Why is this plant called henbane?" He will say, "Because it is poisonous to fowls." You must then ask him, "Why is it called *hyoscyamus* in Latin?" If he is weak in his etymologies, as he probably will be, he will say he does not know. This will give you the opportunity of telling him that though the plant is poisonous to fowls, the etymology of *hyoscyamus* shows that the plant may be eaten without harm by hogs. This will probably be new to him, and then you can proceed to ask him how it is if so many poisons act differently on different animals, to the extent that what is meat to one is bane to another, that we can learn from experiments upon them how to physic ourselves? His behaviour will probably be instructive. Fish are poisoned by it, though it has not much effect upon rabbits.

**Hydrogen, Peroxide of.**—Many experiments have been made upon rabbits and dogs by injecting this gas under their skin; it caused severe obstruction to the breathing, then convulsions, and death. But Guttman injected a solution of the gas into one side of a rabbit's abdomen, and a solution of sulphate of iron into the other, and found that the animal did not die. The experimenters thought they had discovered something useful to humanity by these experiments. "But," says Stillé, "though upon theoretical grounds this compound was introduced as a cure for *diabetes*, it signally failed after a sufficient trial by competent judges."—(*National Dispensatory*, p. 746.)

**Ipecacuanha (P. B.)**—This is a favourite domestic remedy, and much used as an expectorant and emetic. Notwithstanding its enormous use, and the great number of experiments upon animals made with it by Orfila, Majendie, and later by Dr. Dyce Duckworth and others, "its physiological action is not as yet well made out."—(*Wood*, p. 431). The experiments of investigators indicate that the active principle of ipecacuanha (*emetia*) has very little action upon the lungs, but

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we know from daily observation that it is one of our most valuable and trustworthy expectorants.

D'Ornellas and Pecholier are in opposition as to the action of emetia upon sensibility, the one affirming that it is not, the other that it is, affected. They are not agreed as to its action on the temperature.—(*Wood*, p. 432.)

It may be remarked that ipecacuanha does not cause vomiting in rabbits. Dr. Lauder-Brunton explains this by saying that the rabbit's stomach is so placed that it cannot vomit, but this is part of our contention, that animals being so differently constituted to ourselves, experiments upon them are untrustworthy guides in medical practice.

### **Jaborandi.**—

Vulpian says that jaborandi does not slow the heart if curare be largely given so as to paralyse the vagus nerve.

Mr. Langley (*Journal of Anatomy*, x., p. 188), shewed the incorrectness of this by a series of similar experiments.

Ever the same story!

**Lead.**—(*Plumbum*, *P. B.*)—"The muscular action of lead in poisonous doses is exceedingly pronounced in rabbits, but is feeble in dogs and cats."—(*Wood*, p. 38).

Lead poisoning in man often produces loss of sensation and obscurity of vision, but Stillé says (p. 1,116), "Experiments upon animals throw no light upon the occurrence of anæsthesia, amaurosis, &c., from lead."

**Matico Leaves** (*P. B.*)—A valuable arrester of hæmorrhage. We do not refer to this drug because the physiologists have told us anything about it. It is so useful that they generally ignore it. Its discovery is interesting, and typical of the way in which we have gained the knowledge of most of our useful drugs. Its virtues were discovered by a Spanish soldier named Matio, from which Matico is derived. He was desperately wounded in Peru, and dragged himself under the shadow of the plants near him; in his agony, he plucked



some of their leaves and applied them accidentally to his wounds. To his great delight he found that they arrested the bleeding, and his wounds soon healed. In consequence of this, the plant is called, in Spanish, "Yerba soldado" and "Palo del soldado"—"Soldier's herb" and "Soldier's tree." This poor soldier did more than the physiologists have yet done for practical medicine.

**Mercurial Salts.**—(*As Calomel, Bichloride of Mercury, &c., P. B.*)—"The experience of generations strongly supports," says Dr. Ringer (*Materia Medica*, 12th Ed., p. 243), "the general conviction that in some diseases calomel, as well as other preparations of mercury, does increase the bile." But experience and clinical observation count for little with the experimental physiologists. Drs. Hughes-Bennett and Rutherford performed a very large number of cruel and excessively painful experiments on the livers of dogs. The abdomen was cut open, and a glass tube tied into the bile duct, with barbarous attendant circumstances, which placed the animals in an abnormal condition; mercurials and other drugs were inserted in the cut intestines to show their effects. The operators came to the conclusion that the doctors had been all wrong in their conclusions about calomel, and they proved to their own satisfaction that it did not increase the secretion of the bile. Of course no physician worthy of the name paid the slightest attention to these conclusions, but went on administering what his experience had proved to be so valuable; and fortunately so, for it ultimately dawned upon the intellects of Messrs Bennett and Rutherford that there was all the difference between administering calomel by the stomach, thereby mixing it with the gastric juice, and cutting open the upper part of the intestines and inserting the drug there. Rutherford also found that the curare given to keep the animals quiet, diminished the bile and made the heart's action weak and irregular—so that, as Mr. Reid said in the

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House of Commons, April 4th, 1883 :—"The result of these experiments was simply nothing at all."

**Milk.**—The physiologists thought it might be useful in some diseases to inject milk into a patient's veins. "Donné demonstrated on animals the harmlessness of this proceeding."—(*Bartholow's Materia Med.*, p. 16.) Yet a hospital surgeon, writing in the *British Medical Journal* for June 6, 1885, says that, having tried the experiment on human beings, "the operation appears to have proved fatal in a few instances." In another of his cases in which, though there was temporary improvement, the patient died, he adds "it cannot be doubted that the result was hastened by the operation."

**Mountain Laurel.**—(*Kalmia latifolia*.)—The leaves and berries of this American plant are poisonous to man, but partridges feed on its berries, and their flesh kills men who eat it, as it acts upon them as a sedative poison. This was at one time doubted, and the physiologists thought that its poisonous action upon man must be due to putrefaction of the game. It was hard to have to admit that birds could eat berries which were poisonous to human beings, so Dr. Stabler tried a strong decoction of the plant upon himself, and found the fact was precisely as stated. An allied plant, *Andromeda Mariana*, is called "stagger bush," and is fatal to lambs and calves.—(*Stillé*, p. 798.)

**Musk** (*P.B.*)—Jörg and Sundelin have experimented with Musk upon healthy persons with contradictory results—the physiologists say its action on the organism is very feeble, yet there is considerable clinical evidence of its use in nervous diseases.—(*Wood*, p. 197.)

**Nitrite of Amyl.**—*See* Amyl, Nitrite of.

**Nitrate of Silver.**—(*Lunar Caustic*, *P. B.*)—This powerful chemical has been largely used in experiments upon animals. It has been very cruelly injected into their veins, causing choking and violent spasms, finally retching, vomiting, and

death. Dr. Stillé says, however, that there is not the slightest analogy between these effects and those produced on man by its long-continued use.—(*National Dispensatory*, p. 235.)

**Nitropentane** is a compound allied to the Nitrite of Amyl. It is said by Schadow to produce no peculiar symptoms when respired by man, yet inhalation of its vapour by dogs and cats caused dilatation of the pupils and epileptic convulsions.—(*National Dispensatory*, p. 169.)

**Opium** (*P. B.*)—Let us imagine that a quantity of a new drug, called opium, is being examined for the first time by a special committee appointed for the purpose by the College of Physicians; let us assume that the drug has been brought from a far country, and that nobody knows anything about its properties, except some vague traveller's tales about its medicinal effects. The physiologists proceed to investigate its action by a long series of experiments upon animals; they give it to frogs, and they find that small doses throw them into tetanic spasms. Next they try it on a pigeon; they give him twenty grains, and he is none the worse for it. Emboldened by their success, they give thirty grains to a rabbit, and no effect is produced. They are beginning to believe that the traveller's tales are stupid exaggerations, especially as they discover that ducks and chickens, like the pigeons and rabbits, are never the worse for its administration. They resolve now to try it on a hospital patient, and proceeding with extreme caution, as they think, they decide not to venture at first beyond the dose they gave to the pigeon, namely, twenty grains. The patient is a powerful navvy, yet to their consternation and distress he is promptly killed by the dose! If physiological medicine were of any value, surely the method followed by these investigators was right and cautious. Yet how fatal their method when reduced to practice! When opium is administered to human beings in large doses it contracts the pupils to a pin point; in birds the pupils are not affected; in horses they are



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widely dilated; in dogs under its influence the pupils first dilate and then contract. Opium seems as if it were created to confound the physiologists! Dr. Mitchell says it is impossible to kill a pigeon by opium given by the mouth; but Flourens affirms that a single grain will throw a sparrow into profound stupor. None of the opium preparations cause sleep in pigeons, ducks, or chickens. With dogs, cats, and rabbits large doses of opium produce sleep, usually with convulsions. In frogs opium only causes tetanus. Race greatly modifies its effects on man. It drives Javanese and Malays into temporary madness.—(*Ringer, Materia Medica*, 5th Ed., p. 478.)

Opium contains a number of alkaloids and neutral bodies, the physiological properties of which have been investigated. The most important are the following:—*Morphia*, *Thebaia*, *Narcotina*, *Codeia*, *Meconia*, *Narceia*, *Cryptopia*, and *Papaverine*. All these preparations act differently upon man and animals. The statements made concerning their action by experimenters are very conflicting.

“As regards man,” says Dr. Ringer (p. 494), “*morphia* is the most powerful alkaloid; but, according to Bernard, as regards animals, it ranks fourth. *Thebaia* is to animals the most poisonous alkaloid; but its effect on man is much less marked; again, it is said that, with respect to animals, *narceine* is the most soporific of the alkaloids, but its action on man is far less than that of *morphia*.”

*Morphia* is a powerful poison to man, a quarter of a grain being an ordinary dose as a medicinal agent. Yet “birds,” says Stillé, “tolerate the action of *morphia* to an almost incredible degree.” A pigeon has been known to survive a dose of 12 grains. *Thebaia* is an uncertain drug apparently. Falck injected hypodermically a grain and a half of it into a dog, and killed it in ten minutes; yet Frommüller affirms that he has given as much as six grains to a man without result. Liededorff and others say the same, but Eulenberg got rather alarming results with only  $\frac{1}{400}$ th of a grain. In

face of these contradictions the experimenter Wood has the hardihood to say, "it *must* act upon man as upon the lower animals."

*Narcotina* is very fatal to pigeons, but rabbits, guinea-pigs, and dogs are little affected by it.—(*Wood*, p. 232.)

*Codeia* makes dogs and rabbits move in a circle or backwards, and later it produces convulsions and death. Robiquet, having made these observations, proceeded to administer it to children, "in whom it caused very alarming symptoms." Either he must have taken for granted that the poison would act differently upon animals and man, or he concluded that its action in both cases would be similar; in any case, the poor children had a narrow escape from "dying scientifically."

Orfila injected *Meconia* into horses and dogs without effect, yet Harley, experimenting upon man in the same way, found it "a very excellent hypnotic."—(*Wood*, p. 235.)

It is proper to say that Fronmüller did exactly the same "with entirely negative results."—(*Wood*, p. 235.) Experimenters differ in a similar way as to the action of another opium preparation known as Meconic acid.

*Narceia*.—Many physiologists have experimented with this drug upon various animals, and arrived at conclusions which were promptly contradicted by another set of equally competent and painstaking observers. It is said that it causes in frogs sleep, convulsions, and death, but has little or no effect upon pigeons, rabbits, dogs, or guinea-pigs, though it causes fatal convulsions in mice. Many experimenters found it act very feebly upon man in Pennsylvania Hospital. (*See Reports, of the Hospital*, 1868.) This was fortunate for the patients, and proves (if it proves anything) that man is not constituted like frogs or mice, but is more akin to pigeons and rabbits. Claude Bernard, however, experimenting upon the same animals obtained quite opposite results, so that it is evidently not a satisfactory drug, even for hospital patients!

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*Cryptopia*, according to Harley, causes wild delirium in dogs, yet when he injected it beneath the skin in man (bold practitioner !) it only caused "very slight symptoms."

*Papaverine*. — Claude Bernard and Baxt, experimenting upon animals with this drug, arrived at what Wood terms "irreconcilable conclusions" (p. 223.) Administered to frogs it was found to act as a convulsant, but rabbits and guinea-pigs bore enormous doses of it. One physiologist gave it to dogs without any effect, but another found that it produced profound coma, and Hoffmann believes it to be inert in man, because he took seven grains himself without any physiological results.

*Porphyroxia* is another of the many opium salts. It convulses frogs, pigeons, sparrows, and guinea-pigs ; yet, according to Schroff, large doses are without influence upon man.

Whether therefore we consider opium in its crude state or separate it into its active principles, its physiological effects are utterly at variance with any consistent theory applicable to the science of medicine.

**Phosphoric Acid.**—(*P. B.*)—Notwithstanding the labours of many physiological experimenters it is quite impossible to discover what are the real properties of this medicine, so contradictory are the views expressed as to its action. Dr. Stillé says (p. 71), "The views expressed by different writers are not easily harmonised."

**Podophyllin.**—(*P. B.*)—This well-known drug has been the subject of many investigations as to its action upon the liver. Dr. Anstie studied its action on dogs and cats. Writing of these experiments Dr. Ringer says (p. 385), "The animals suffered great pain, and soon became exhausted." They vomited violently, their intestines were congested, inflamed, and ulcerated by the injection of an alcoholic solution of the drug into the abdomen, and as the result of these atrociously cruel experiments, Dr. Anstie came to the conclusion that



podophyllin was not a cholagogue, that is to say, it did not increase the secretion of bile. Rohrig performed more experiments, the results of which were opposed to the statements of Anstie, and then Professor Rutherford began his long series of awful vivisections upon dogs for the Edinburgh Committee, endeavouring to reconcile the conflicting results of other experimenters. "These experiments," says Dr. Stillé (p. 1124), "have led to diametrically opposite results.

**Poison Oak.**—(*Rhus Toxicodendron*.)—"The medicinal virtues of this plant are too uncertain to inspire any confidence."—(Stillé, p. 1464.) Dogs have died after being merely exposed to the emanations of this plant, and they are poisoned by its juice, yet herbivorous animals devour its leaves with impunity, and it is recorded that two children who between them had eaten a pint of the berries were not killed by them, though they became delirious and convulsed.

**Prussic Acid.**—(*Hydrocyanic Acid*, *P. B.*)—This, as everybody knows, is one of the most deadly poisons to human beings, yet on horses and hyænas it has little or no effect. The elephant, however, is destroyed by a relatively small dose.

Claude Bernard and others said that after poisoning by prussic acid the venous blood of the animals experimented upon was of a <i>bright arterial hue</i> at the <i>post mortem</i> . — (Wood, p. 182.)	Bischoff and other German investigators say that they found nothing but <i>dark venous blood</i> either in man or animals so poisoned.—(Wood, p. 182.)
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Boëhm and Knil ( <i>Archiv für Exper. Pathol. und Therap.</i> Bd. ii., p. 137) experimented on cats with this poison and obtained certain results.	Preyer performed the same kind of experiments on rabbits and obtained quite different results.
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Rossbach and others found that it lowered the frequency of the pulse.	Wahl found that it increased it.
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Boëhm and Preyer contradict each other as to the action of this drug on the respiration.

Kolliher and Stannius are at variance as to its local effects on the nerves.—(*Wood*, p. 187.)

Some of these experiments were of the most terrible kind, such as opening the chests of rabbits and exposing the heart, and then administering the poison.

**Quinine.**—(*P. B.*)—Physiologists are not agreed as to the therapeutic action of quinine.

Professor Binz poisoned a cat with quinine and afterwards examined its blood. He found the white corpuscles much less abundant than those in the blood of an unpoisoned cat.—(*Virchow's Archiv*, Bd. xlv., p. 137.)

Binz experimented with quinine on ten dogs and rabbits, and found that it killed the microscopic entities which cause septic diseases.

Schwalbe and Geltowsky performed similar experiments and could detect no difference in the blood before and after poisoning by quinine.—(*Pflüger's Archiv*, Bd. i., p. 203.)

Professor Wood says these experiments indicate very clearly that it does nothing of the sort.—(*Wood*, p. 73.)

It has been maintained by many physicians, and apparently confirmed by experiments on animals, that quinine is “dangerous and even criminal in any diseases of pregnant women.”—Dr. Jos. J. West (*Savannah Journal of Medicine*, Vol. i., p. 19.)

To test this question, Professor Chiara, of Milan, experimented “in his public service” with quinine “on eight women, all in the eighth month of pregnancy.”—(*L'Union Médicale*, Nov. 20, 1873.) Happily no untoward results followed.

**Rye, Ergot of** (*Ergot*, *P. B.*)—

The physiological observations of Holmes and of Wernick on the action of ergot of rye on the circulation are directly contradicted by Dr. Paul Vogt (*Berliner Klin Wochenscht.*, 1869, No. xii.) who

performed similar experiments on vivisectioned rabbits by extirpating the cervical ganglia. The results obtained by Eberty are in accord with those of Vogt, and disagree with those of Dr. Holmes.—(*Wood*, p. 546.)

**Sanguinaria.**—(*Bloodroot*.)—This plant is a native of North America, and is used in bronchitis, asthma, and dyspepsia.

Its “physiological action,” as shown by many experiments upon animals, “bears no relation to its medicinal use.”—(*Stillé*, p. 1254.)

**Sarsaparilla.**—(*P. B.*)—Doctors are not agreed as to the question of the efficacy of this drug, and though some surgeons still hold by it, the physiologists are sceptical as to its uses.

Palotta experimented with it, and found its alkaloid produce gastric disturbance, vomiting, and slowing of the pulse. Boecker found it to be devoid of physiological activity and therapeutic power. — (*Bartholow's Materia Medica*, p. 255.)

**Senega.**—(*P. B.*)—This is a most valuable medicine for relieving the bronchial troubles of aged people. The experimenters discourse learnedly about its action on the various organs of the frog, but their investigations have thrown no light on its clinical application, and they give us no hint as to the mode in which the bronchial and pulmonary disorders are relieved by its use.—(See *Stillé*, p. 1287.)

**Soda.**—(*P. B.*)—The Salts of Sodium seem to have little influence over the higher animals, but frogs are more susceptible to their action, dying in convulsions after the injection of the drug.—(*Virchow's Archiv*, Bd. xxxiii., p. 507.) As usual, there are contradictions between eminent physiologists as to the action of this medicine upon animals.

Grandeau (*Robin's Journal de l'Anatomie*, 1864) found that the injection of one hundred and According to Guttman (*Virchow's Archiv*, Bd. xxxv.), the Soda salts, when injected into



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seven grains of the carbonate of sodium into the vein of a dog produced only very slight symptoms, and that thirty-five grains of the nitrate administered in the same way to a rabbit only caused some convulsive movements.—(*Wood*, p. 593.)

Guttman says that these salts are without influence upon the nerve centres, the peripheral nerves, or the muscles.—(*Wood*, p. 594.)

The effects of the administration for several days of large amounts of salt (chloride of sodium) upon human beings have been elaborately investigated by Dr. Münch, and found to be very feeble.—(*Wood*, p. 594.)

**Sow-Bread.**—(*Cyclamen*).—This plant is used in domestic medicine in France. Pigs can eat any quantity of its root without harm; yet fish are poisoned by its juice, and will die in water containing  $\frac{1}{3000}$ th part of the juice of this root. Vulpian says it is fatal to frogs. Claude Bernard made many experiments on animals with the plant, and they led him to conclude that its active principle, *cyclamin*, resembled curare in its action; but, as he injected a large amount of the liquid in which it was dissolved into their windpipes, it is very likely they died of “asphyxia, and not of *cyclamin*.”—(*Stillé*, p. 492.)

**Spanish Fly.**—(*Cantharides*, *P. B.*)—According to the experiments of Orfila and of Beaupoil on the physiological action of *Cantharides* upon dogs, it would appear that this medicine acts differently upon men and animals.—(*Wood's Therapeutics*, p. 563.)

**Squill** (*P. B.*)—Everybody knows how valuable this drug is in bronchial affections; it is, perhaps, the commonest

the blood in very large amounts, will slowly cause death, the agony being very prolonged, and, when the chloride is used, convulsions are developed.—(*Wood*, p. 594.)

Podocæpow says that they do exert a very feeble action upon the peripheral nerves and the muscles.—(*Wood*, p. 594.)

ingredient in a bottle of ordinary cough medicine. Yet, as Dr. Stillé says (p. 1279), in summing up the results of many experiments upon animals with the active principle of squill—*scillitin*—"There is nothing in the results of scientific investigation even to suggest that squill acts upon the bronchial mucous membrane, but the much more direct and conclusive evidence of clinical experience leaves no doubt of its great value in bronchitis." Some physiologists, quoted by the author of these remarks, killed a number of rabbits by a poisonous dose of the drug; it produced violent inflammation and erosion of the stomach, and hæmorrhage about the heart, kidneys, brain and lungs was found; but on the same experiments being repeated by Husemann and König no injuries of stomach or kidneys were discovered.

**Stramonium.**—(*Datura Stramonium*—*Thorn Apple*, *P. B.*)—Stramonium is almost as deadly a poison to man as belladonna; yet insects of the caterpillar tribe feed upon it, and goats devour it without injury. A decoction of the leaves, on the other hand, when merely applied to the skin of the rat, caused convulsive movements, and large doses have caused death in horses.

**Strychnine** (*P. B.*)—An alkaloid prepared from *Nux Vomica*. This deadly poison, like so many others which we have considered, bears out to the full our contention that it is in vain to attempt to discover the physiological action of drugs on man by experimenting with them upon animals. "Very minute portions of strychnia in the soil will destroy the life of growing plants."—(*Stillé Therapeutics*, p. 1362.)

Flies and intestinal worms are readily killed by it, and it is very fatal to fish. It is generally believed that the frog is peculiarly sensitive to strychnine, but Falck maintains that in proportion to its weight it is really not so susceptible to its influence as various mammals, and that "it requires four times the dose needed by dogs, cats, rabbits, &c., to produce an equal effect upon frogs."—(*Stillé, loc. cit.*) Birds appear to

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be comparatively insusceptible to its action. Stillé says that a hen, in progressive doses, at last took two-and-a-half drachms of nux vomica daily. It requires ten times as much strychnine to kill a chicken as would suffice for a pheasant. Yet half a drachm of this poison has proved fatal to human beings.—(*Guy and Ferrier's Forensic Medicine*, 4th Ed., p. 572.) The ruminating animals are not so readily affected as other quadrupeds when the poison is taken by the mouth. Ten grains may fail to kill a sheep when thus administered, though half of a grain may kill a man. The same would be fatal to the sheep if administered hypodermically or into the veins. The action of the poison on the goat is similar to that on the sheep.

In whatever way it is given to cats, whether by the stomach, injected into the veins, or under the skin, they “resist it singularly,” says Stillé. Yet dogs are easily killed by it. It has been enclosed in fulminating bullets to kill whales, and it has been observed that when so poisoned they perish in the spasms which are so characteristic of its action on many other animals, yet “guinea-pigs and monkeys are said to be comparatively insusceptible to it.”—(*Stillé, loc. cit.*)

As we have said, half a grain has proved fatal to an adult, and it is on record that a child died in four hours from taking one-sixteenth of a grain. Dr. Lauder-Brunton minutely details the atrociously cruel experiments of Majendie on the physiological action of strychnine upon dogs. He terms the *modus operandi* “a model of this method of research.” As the great English experimenter so highly praises the system followed by the most cruel perhaps of all the foreign physiologists, it is only fair to assume that it is imitated in our English laboratories. Dr. Lauder-Brunton in page 147 of his *Text Book of Pharmacology* has lifted the veil for us.

The strychnine was introduced under the skin of the thigh of a dog; soon the poison began to produce symptoms of general malaise; the poor beast “took shelter in a corner of



the laboratory," and convulsions of the muscles of the body occurred, "the fore feet quitting the ground for a moment on account of the sudden extension of the spine." The animal was quiet for a few seconds, and was then seized with convulsions "more marked and prolonged than the first." Others succeeded, gradually becoming more severe. Each time the animal was touched a convulsion immediately followed. My readers will now be in a position to understand what is the value of Mr. Erichsen's statement when he says, "the experiments consisted chiefly of hypodermic injections, and were mostly of a painless character."—(*Report for 1887.*) No cutting operation could have caused more intense suffering than this injection of strychnine caused the dogs used by Majendie. As for the utility of such experiments Stillé says, *loc. cit.*, "Although physiological experiments do not lead to the suggestion that strychnine acts upon the peripheral ends of nerves, clinical observation, as in so many other cases, is supposed to demonstrate what the former method has failed to show." This is a very important admission emanating from a great authority on *Materia Medica*, and tends to prove that we are not retarding the progress of medical science by our efforts to confine it to its proper sphere.

**Tartar Emetic.**—(*P. B.*)—*Tartarated Antimony.*—Many cruel experiments have been performed upon animals with this drug. It seems to have been proved in this instance that its action is precisely the same on the lower animals as on man.—(*See Wood's Therapeutics*, p. 151.) In contradiction to this statement, Dr. Lauder-Brunton says that "Ipecacuanha, or Tartar Emetic, will cause vomiting in man, but does not do so in rabbits. The reason of this is that the position of the stomach in the rabbit is different from that in man, and is such that the animal cannot vomit."—(*Pharmacology*, p. 40.) Nöbiling had a theory that the action of Tartar Emetic upon the heart is owing to the potash it contains. Of course he

performed a number of experiments to support his theory, and equally, of course, another experimenter (*Wood*, p. 151), says, "This theory in itself is so improbable that it would seem scarcely worthy of discussion were it not for the fact that Nöbiling asserts that the tartarate of antimony and soda is not poisonous" (even to such lengths will men go who have a theory to support!) "Dr. Radziejewski (*Reichert's Archiv für Anatomie*, 1871), has repeated and extended the experiments of Nöbiling, and completely disproved both the asserted fact and the theory based upon it."—(*Wood*, p. 151.)

"A rabbit," says *Wood*, "poisoned with this drug could still drag itself around, and suffered its paws to be deeply burned without evincing the slightest evidence of feeling." Upon this our author says, "In man the anæsthesia which occurs in animals has been overlooked, but in the advanced stages of poisoning it is no doubt present." This point evidently wants clearing up!

**Thein**, from *Tea*.

Chemists and physiologists tell us that the active principle of tea, *Thein*, and that of coffee, *Caffein*, are identical. Dr. A. Burnett experimented with these alkaloids upon frogs, mice, rabbits, and cats, and came to the conclusion that they were "identical throughout the whole range of their action." Are we to conclude therefore, that the action of tea and coffee on the human system is identical? By no means. Says *Stillé* (p. 1424), "The identity of these alkaloids in their physiology does not imply a similar identity in tea and coffee. As little should we be entitled to infer that all alcoholic drinks produce identical effects because they all contain alcohol as their chief constituent. It is just as certain that tea and coffee differ in their action upon the human system as that Rhenish or Bordeaux wines act very differently from whiskey or brandy, although in all of these liquors the common cause of their effects is alcohol." So much, therefore for the value of physiological medicine!

**Toot Plant** of Australia.—(*Coriaria Sarmentosa*.)—This is exceedingly poisonous to human beings, yet native horses and cattle, and it is said even “old colonists” eat the plant with tolerable impunity.

Fifteen berries of another species (*Coriaria Myrtifolia*) have caused the death of an adult, a teaspoonful of an extract of the juice will kill a cat in two hours, yet when the plant is given to rabbits they do not appear to be affected by it.—(*Woodman & Tidy's Toxicology*, p. 392.)

**Tobacco**.—The active principle of this plant is nicotia, and it stands next to prussic acid in the rapidity and energy of its poisonous action. Tobacco is poisonous to all forms of life, yet “herbivorous animals are not readily affected by it.”—(*Stillé*, p. 1406.)

Many experimenters have investigated its action on the nerves, muscular system, and circulation of the lesser animals, chief of whom are Traube and Rosenthal, but Wood says, p. 363, “that the results obtained by Rosenthal are difficult to reconcile with the effects—already quoted from Traube.”

**Trimethylamina**.—This drug was first employed medicinally for the cure of articular rheumatism in 1854. It is obtained by distilling herring brine or stale fish with lime. Injected under a rabbit's skin it caused trembling, convulsive movements, agitation, increased sensibility and quickening of the breathing and heart's action—then depression or collapse, paralysis, and death by asphyxia, in fact, such symptoms as were termed by Mr. Erichsen in his report as consequent upon “hypodermic injections” and “mostly of a painless character.” To dogs they gave the drug by the mouth, producing vomiting, anxiety, distress, immobility, muscular tremors, emaciation, bloody urine at the end of six days. (Note the length of time occupied by these injection experiments, and the pain and extreme misery inflicted on the animals).

When the rabbits were killed by the injections, mortification was found at the point of the insertion of the needle, the lungs



and kidneys were congested, yet all these things we are told are painless and trifling because they do not involve vivisection in the ordinary sense.

Husemann, Dujardin-Beaumetz, and Stillé, are at variance as to the physiological action of the drug. Its action upon man appears to be quite different from the effects observed on the rabbits, and it has been entirely superseded as a remedy for rheumatism by the Salicylates, so that the sufferings of the animals have not in this instance conferred any boon on medicine.

**Urea.**—Ségalas demonstrated that urea injected into the veins of animals notably increased the discharge of urine. According to Rabateau it exhibits no diuretic action in human beings even in very large doses.

**Veratria.**—(*Veratrine*, *P. B.*)—Obtained from cevadilla seeds. This is an exceedingly powerful and dangerous alkaloid. Even the minutest quantity brought in contact with the nostrils occasions great and continued irritation, sneezing, and coughing. Injected hypodermically, it causes the most intense pain, as though one were burned with hot needles. Even the fortieth or from that to a twentieth of a grain inserted under the skin causes a tingling which begins in the fingers and toes and extends over the whole body. Yet we know that Kolliker (*Virchow's Archiv*, *Bd. x.*, p. 261) opened the skulls of living frogs and dropped in a solution of the poison, causing "violent general tetanic convulsions." Prevost (*Robin's Journal de l'Anatomie*, 1868, p. 209) performed similar experiments, and of course the Frenchman contradicted the German on every point. We include this drug in our observations, as it illustrates how exceedingly cruel the "painless hypodermic injections" may be, though they involve no cutting operations whatever. Professor Wood says "the study of its physiological action shows that its *rational therapeutical use* (note the distinction!) must be limited."—(*Therapeutics*, p. 169.)

**Woody Nightshade.**—(*Solanum Dulcamara*.)—The extract of this plant when introduced into the stomach of rabbits causes a remarkable degree of apathy with blunted sensibility. It reduces the frequency of the pulse and the respiration, and brings on later, convulsions and death. Dr. John Harley experimented with it on man, without causing any appreciable physiological effect. Whereupon Dr. Stillé (*Therapeutics*, p. 519) makes the following admirable remarks:—"The so-called scientific therapeutists of the present day are disposed to deny any curative virtues to dulcamara, because they are unable to explain those it is alleged to possess, according to their notions of its mode of action. Such a reason may, in a logical sense, be called impertinent. The claims of dulcamara rest on the same grounds as those of opium, mercury, and cinchona, the ground of clinical experience."

M. Duval gave 180 Woody Nightshade berries as well as four ounces of the extract to dogs without producing any effect, yet death is recorded to have been produced by two berries in a child four years old.—(*Woodman and Tidy's Forensic Medicine and Toxicology*, p. 434, 1st Ed.)

**Yellow Jasmine.**—(*Gelsemium*, *P. B.*)—Rabbits and cats when poisoned by *Gelsemium* perform very remarkable backward movements, in which sometimes a complete backward somersault occurs. No corresponding acts have taken place in the fatal cases observed in man. Bartholow says (p. 415) that Ringer and Ott, in an elaborate series of investigations, have confirmed his experimental observations, but he regrets that they were regarded as "inconclusive" by Dr. H. C. Wood.

Dr. Stillé says, p. 676, that "incalculable mischief" has been produced by using this and other drugs "upon no better ground than their power of lowering the pulse and depressing the nervous system." The experimental school of physiologists look upon the animal organism as merely a complicated machine; powerless to solve the mystery of being, they ignore

it and treat its disturbances of function as they would treat a watch or a steam-engine out of order. The stomach is but a superior sort of test tube, the blood vessels mere conduits, and the nerves electric wires, all to be regulated on chemical and mechanical principles; hence the abundant errors and the irreconcilable confusion which have occupied our attention in these pages. What else could have been expected?

I would like to ask "the candid reader" who may have followed me thus far if he really thinks that medical science can make any progress in such a direction as this? Does he honestly think that it is worth while to torture countless thousands of sensitive creatures, to stifle the voice of pity within his breast and to degrade his higher nature by dethroning every sentiment of mercy, merely to attain such results as I have been describing? Putting aside for a moment the consideration of the misleading and confusing nature of the experiments, and the inferences to be drawn from them, let him ask himself what he thinks has been gained by all this cruelty in testing the action of drugs. What has it taught us about opium? What about mercury, quinine, and the other drugs in daily use by every doctor? I firmly believe that our knowledge so far as it concerns the healing of disease has not been advanced one single step by any such means. But suppose it has dowered the medical profession with some boon which I have overlooked or concealed from my readers? I would reply in the words of the poet Coleridge, that "the duties which we owe to our own moral being, are the ground and condition of all other duties; and to set our nature at strife with itself for a good purpose, implies the same sort of prudence as a priest of Diana would have manifested who should have proposed to dig up the celebrated charcoal foundations of the mighty temple of Ephesus, in order to furnish fuel for the burnt offerings on its altars."\* If the

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\* *The Friend* (S. T. Coleridge, p. 20).



great writers on ethics who have denounced this sacrifice of the temple of God which is within us for the paltry boon of a little increase of knowledge are not listened to by those who have the power to arrest the hands of the men of blood, it is certain that nothing which I can say will have any better effect. One lower motive I may appeal to with some hope of success. I have, I venture to think, exposed many of the false pretences of the vivisectioning fraternity, and with regard to their claims to the gratitude of suffering humanity have "poured contempt on all their pride." They may have earned the rewards of their learned fellows in medicine and physiology, and decked their brows with the laurels of their Universities. Every profession distributes its own prizes in its own sphere, and the path of the vivisector is perhaps just now the most direct one by which to attain those of the medical profession. They have their reward, and they are welcome to it. Let them be held in honour by those who are participants in their guilt. I would not deprive them of a single leaf of their blood-sprinkled chaplets. What I have aimed at removing is the usurper's crown, stolen from those who have advanced the sciences of medicine and surgery by legitimate and time-honoured means. These false pretenders claim our gratitude and esteem. What sort of title they have to either I trust these pages have shewn.

In my opening paragraphs I quoted from the Inspector's Return relating to experiments on living animals, where he states that of the 280 therapeutical experiments performed under the Act in 1887, some were undertaken "either with the view of justifying the further extension of such remedies to man or of enlarging their present sphere of usefulness." Puzzle—to find the animal on which to try any such remedy for the purpose described!

Other experiments with "some of the old drugs" were undertaken, says Mr. Erichsen, with the view of inquiring "whether their action is such as to justify their continued

administration for the purposes for which they have hitherto been used." Did anybody propose to discard the old drug opium, I wonder, because it had no effect upon pigeons and rabbits? Did anybody propose to discard calomel ————? Yes! Professor Rutherford did; but that is a sore subject, and the profession has laughed at him sufficiently ever since. We say no more of that—it is ill flogging a dead horse. Prussic acid is an old drug, and a merciful poison for diseased dogs and cats. Did any wiseacre propose to turn it out of the pharmacies because it has little or no effect on horses and hyænas? Are we to give up belladonna because rabbits eat it without harm? And henbane because it has no effect on sheep, cows, and pigs?

But it is idle to ask Mr. Erichsen any more questions. I believe Mr. Erichsen to be a very learned and a very honourable man; therefore I am equally unwilling to believe that he is not perfectly well acquainted with the whole of the facts which I have collected in these pages, or that he wishes the public to believe that the therapeutical experiments referred to in his report will have any such results as those suggested. My respect and esteem for Mr. Erichsen lead me to think that he knows better; but I wish he had thrown the responsibility for the statements I have quoted on the persons who performed the experiments and had not accepted them himself.

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FOR THE PROTECTION OF ANIMALS FROM VIVISECTION.

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## THE FALLACY OF RESTRICTION APPLIED TO VIVISECTION.

BY FRANCES POWER COBBE.

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SECOND EDITION.

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To those who have taken part in the vivisection controversy since it began in England in 1874, there is no need to address any argument concerning the right policy to be adopted by the opponents of the practice. They know, and no doubt the vivisectors know equally well, that it is a case of “all or nothing.” The cruel and misleading Method of Research must either continue to be legalized, and used *as a Method*,—with or without a few formalities, possibly harassing to the physiologists, but of little or no practical use to the victims,—or it must be forbidden *as a method*, and Mr. LAWSON TAIT’s aspiration be fulfilled and the practice “stopped in the interests of Science, so that the energy and skill of investigators may be turned into better and safer channels.”

A new generation of Anti-Vivisectors has, however, risen up since those distant days of our first warfare against scientific

cruelty, and some have very naturally questioned the necessity for assuming our extreme position. They perceive the sad remoteness of the fulfilment of our hopes in the final suppression of Vivisection, at once by law and public opinion, and, in their humane impatience on behalf of the poor brutes, they cast about for some compromise which may be obtained, as they fancy, much more quickly. They cannot persuade themselves that the "reconciliation of Humanity and Science," which the Royal Commission pointed out as the proper goal of legislation, is really unattainable, or, if it should prove so, that it is impracticable for them so cunningly to frame an Act of Parliament as that, while seeming to those who pass it to leave scope for Science, it shall actually secure the claims of Humanity, and make any really cruel experiment impossible under its provisions. Thinking in this way it is inevitable that these friends should regard us, who hold tenaciously to the programme of Abolition, as injudicious and fanatical; and they repeat to us once more the proverb which has become one of the stock-phrases of our weary controversy, that "Half a Loaf is better than no Bread;" to which we would fain reply, "Not so, if the half loaf be mere flummery, and by accepting it we relinquish the whole loaf for ever."

In the hope (always a precarious one !) of conveying to our friends the fruit of our own hard-earned experience, I propose here to state as succinctly as possible the reasons why we hold it to be a grievous mistake to demand anything short of the total prohibition of Vivisection.

Let the history of the Victoria Street Society be briefly reviewed at starting, that the moderation of its policy, and the caution wherewith its leaders have advanced, may be borne in mind.

In November, 1874, a Memorial to the Royal Society for the Prevention of Cruelty to Animals was prepared by the present writer, and, on the 25th January, 1875, presented to



the Committee of that Society, with the signatures of 600 persons, praying that action might be taken to obtain the legal restriction of Vivisection. On the 4th of May, 1875, a Bill for Regulating the Practice of Vivisection, drawn up at the same writer's instance (after consultation with Lord COLERIDGE and many other men of experience), was introduced into the House of Lords by Lord HENNIKER. Then followed the Royal Commission, and it became evident that a Society was needed to carry on the work. The Association, afterwards named the VICTORIA STREET SOCIETY, was founded in November, 1875, and was awkwardly, but most carefully, named the "Society for the Protection of Animals *liable* to Vivisection." Its prospectus announced that its aim was "*to obtain the utmost possible protection for*" such animals. The Society so constituted, urged on the Home Office, in the following March, the introduction of a Bill to carry out the recommendations of the Royal Commission; and the Committee subsequently sketched the measure which Lord CARNARVON introduced on behalf of the Government, and which, while affording entire immunity from vivisection to dogs, cats, horses, and asses, placed the vivisection of other vertebrate animals under a restrictive system of Licences. In July a great Medical Deputation invaded the Home Office, and induced Mr. R. Cross (now Lord Cross) (into whose hands the Bill had passed for presentation in the House of Commons) to mutilate it so deplorably that, on becoming law as the Act 39 and 40 Vict., c. 77, it has proved the almost futile measure we know it to be.

Up to this epoch, the hope that a really effective restrictive measure was possible and might be obtained from Parliament, never deserted the founders of the Victoria Street Society; and the obvious moral difference between painful and painless experimentation was insisted on by no one more anxiously than by myself, with a view to attaining the apparently feasible object of a valid "reconciliation of science and humanity;"

and of preventing the strength of the agitation being wasted by the larger and (as I was often assured) hopeless demands of the *International* and the *London Total Abolition Societies*, by that time at work. But the utter transformation of Lord CARNARVON'S Bill by the aid of the "amendments" of Mr. CROSS, and the subsequent exasperating experience of the Inspector's delusive Returns, were lessons which the most bigoted adherent of half-measures could not fail to learn and which the whole body of the Victoria Street Society, with very few exceptions, actually learned. In the case of the chief workers the change of policy was likewise enforced by the growing conviction (derived from study of the principal Manuals of Vivisection, and only to be conveyed by such cumulative evidence as they afford) that the aims, sentiments and methods of Vivisectors are not, and never can be, amenable to humane restrictions. On the 27th April, 1877, a great meeting of the Society supported Mr. HOLT'S Bill for total prohibition; and on the 7th August, 1878, the Committee, by the advice of the President and of nearly all the leaders of the Society, passed the following resolution:—"That the Committee will henceforth appeal to public opinion in favour of the Total Abolition of Vivisection." Thus it was not till nearly four years' experience of Parliamentary action on the subject, and of very arduous and painful study, that the programme of Restriction was finally abandoned by the originators of the movement. To find themselves now told by those who have come at the eleventh hour into the vineyard, that they have been hasty, and understand much less than these novices of the practical working of such a cause in Parliament and of the real nature of Vivisection, is, no doubt, one of those "afflictions which are common to men" who start public agitations. I shall, however, state as clearly as may be some of the reasons which I know induced the late Lord SHAFTESBURY, and I may presume also Lord COLERIDGE, Cardinal MANNING, the Bishop of WINCHESTER, Mr. STANSFELD,

LORD TENNYSON, LORD MOUNT-TEMPLE, MR. BROWNING, and all the other honoured Vice-Presidents of the Society as at present constituted, to accept the principle of Total Prohibition instead of Restriction.

1st. No Restrictive Act of Parliament which human ingenuity may devise can afford efficient protection to animals delivered over to a vivisector. The advocates of Restriction fondly imagine that they *can* devise such provisions; but with all respect for them, I unhesitatingly assert that no one who understands the *purposes and methods of vivisectional research* can believe that such provisions are possible. It is of course easy to devise a Bill which, *e.g.* might provide that every Vivisection should be described exactly beforehand and announced for a month in the *Times*; and that it should take place on a table, in the middle of Exeter Hall, in the presence of the Committee of the Jermyn Street Society. But no one who has read the books of CLAUDE BERNARD, CYON, and BURDON-SANDERSON could, for an instant, suppose that any such plan would meet the ever-varying, ever-shifting suggestions of scientific curiosity; or that infinitely delicate and difficult experiments, often extending over days and weeks, and requiring perpetual variation, could be performed under any similar circumstances. A Bill embodying provisions in any way resembling these would be simply held by all physiologists to be practically a Bill for the total prohibition of vivisection; and though its promoters might say "*Tant mieux*, if it prove so," the general opinion would be, that such a Bill was an insult to Parliament; and, in any case, it would as certainly be thrown out as a Bill frankly prohibiting the practice altogether,—with the additional scoff that its promoters stultified themselves by admitting that Vivisection *ought* to be sanctioned and then, practically seeking to make it impossible.

Again, the advocates of Restriction fall back on the old fallacy of Anæsthetics, and vaguely conceive they could pass a



measure forbidding all experiments except on animals under complete anæsthesia. But even a superficial acquaintance with the works of vivisectors shows that they would be stopped at every turn could such a condition of experiments be really secured. That it could *not* be secured by any conceivable precautions, is almost equally clear. Once more the words of Dr. HOGGAN in his famous Letter are verified. "Anæsthetics have proved" (by the delusions which humane people indulge about them) "the greatest curse to vivisectible animals."

If Vivisection can neither be performed under full public inspection, nor under any certainty of complete anæsthesia of the victims, it becomes obvious that real safeguards against abuses of the practice cannot be obtained. A poor dumb brute shut up in a laboratory with one or two, or half a dozen physiologists and students, all imbued with the "joyful excitement" wherewith CYON says they ought to "approach a difficult vivisection," can, from the very nature of the case have no protection against the uttermost extremity of torture. In other words, there can be no line drawn by the Legislature between the Use of Vivisection; and the cruellest Abuses into which it has perpetually and notoriously fallen. But whenever the abuses of a practice are very great, and they cannot be separated from the use, then, according to a well recognized principle of legislation, the use itself must be forbidden. This principle has been already actually carried out by Parliament; and also in the case of animals. By the Act 12 and 13 Vict., c. 60, the employment of Dogs for draught of any kind, is totally prohibited.

2nd. The incentive to Vivisection is, unquestionably, in the vast majority of cases, the honour and distinction obtained among the confraternity by successful researches respecting large or small points in physiology; such distinctions culminating in the statue recently erected in Paris to Claude Bernard, which represents him as standing beside a torture

trough. To obtain such *kudos* it is indispensable that the vivisector's experiments be *published in the scientific journals*. So long then, as, under any restrictive law, Vivisection is permitted in a country, so long such publications (with due caution in alleging the use of anæsthetics or submission to other legal conditions) may safely go on\*; and if Anti-vivisectionists attempt through such publications to bring the experimenters before a court of law, friendly witnesses, such as appeared in the Ferrier case in Bow Street in 1881, may, no doubt, always be relied on to get the vivisector triumphantly out of his scrape. But if, on the other hand, Vivisection be *unconditionally forbidden*, then, and then only, the great incentive to the practice will be removed. No vivisector will dare publish any experiment at all; and it may be safely prophesied that the zeal of the investigators will thenceforward be very quickly turned into other channels, and, like other heroes, they will "go where glory waits them." It is also to be noted in this connection that the trade of dog and cat-stealing and selling for vivisection, might be stopped under a prohibitive, but not under a restrictive law.

3rd. The results of vivisection being, according to our contention, worse than *nil*—misleading and injurious to science—we shall best befriend Science itself by closing up that false path altogether and not making a stile to enable travellers to walk there. In pretending merely to restrict it we are practically admitting our opponents' assertion of its utility; and if we do this, we involve ourselves in inextricable difficulties to determine, next, the point where

\* A medical man of repute has described as a frequent *joke* of Vivisectors the placing of a bottle of chloroform on a shelf over the torture trough, thereby justifying their statement that "the experiment was performed under anæsthetics." This kind of grim jest may or may not be practised, but the public has *no guarantee whatever* that the licensed Vivisectors' assertions that they employ efficient anæsthetics when not allowed by certificate to dispense with them, are aught better.

a little pain,—or a greater pain,—to one animal or to a thousand animals,—ought to be sanctioned to obtain benefit for mankind,—and how great or direct that benefit ought to be,—and how far it must be likely of attainment. We fight the battle, in short, thenceforth on our enemy's ground; and must infallibly be pushed back and back, till all the excesses of scientific cruelty be justified; just as they were by the different witnesses before the Royal Commission.

4th. Every imaginable law sanctioning in any measure Vivisection is not only *fallacious* as regards the protection of animals, but *demoralizing* to the men who pursue the practice, and injurious to the community which, at one and the same moment, institutes Bands of Mercy and treats domestic creatures as pets, servants and playmates, and then authorizes physiologists to dissect them alive as mere parcels of bone and tissue. Either Vivisection ought to be wholly scouted and forbidden, or the whole movement on behalf of kindness to animals which has been the glory of England since the days of ERSKINE and MARTIN, ought to be abandoned, and the hypocrisy renounced of caressing a dog to-day and consenting to his vivisection—restricted or unrestricted,—to-morrow. So long as we regard a sentient and intelligent creature as a mere mechanical clock which we may open at will to see how it works, so long as we think of a brain which holds all the wondrous instincts and reasonings of the dog and the ape as a lump of grey matter to be scooped out and broken up, as GOLTZ says, “like a potato field” to note what happens after its mutilation,—so long as we think of the little heart which beats with joy for the return of a beloved master, or breaks for sorrow on his grave, as a “muscle” into which it is “interesting” to push a catheter to ascertain its exact temperature,—so long as we regard the frames of animals in this fashion, the spirit of a CYON and a MAJENDIE will rise up like a hideous mental disease amongst us. Nothing but absolutely forbidding a practice, linked and associated for ever



with the most reckless cruelty, (even when for the nonce carried out without actual offence), can stop the contagion of this New Vice of Scientific Cruelty. Every system of Law is a system of Education to the public conscience, and the State trains men in materialism, selfishness, and contempt of the rights of the weak and helpless by every concession it makes to the demands of a curiosity which knows neither sympathy nor pity. Even if it were expedient (which we deny) to sanction restricted Vivisection in the interests of Science and Medicine, a still higher expediency would require that such interests should be disregarded rather than that the hitherto rising current of humane sentiment in the nation should be driven back, and the portentous type of character formed by Vivisection be developed in our highest seats of culture.

To sum up our conclusions. No Restrictive Bill could be devised which would protect vivisected animals from torture; and if such a measure could be drawn, it would meet in Parliament precisely the same opposition as our Bill for the Prohibition of Vivisection—for the simple reason that it would be tantamount to Prohibition. Exactly in proportion as a Bill afforded real checks and not sham ones, it would be virulently opposed, and only suffered in the last resort to pass when the efficiency of the checks had been nullified by Amendments. To introduce such a measure would therefore be only to lower our flag; to admit that Vivisection is useful; to consent to educate the rising generation in CYON'S sentiments; and, finally, to open the way to a fresh series of hoodwinkings and deceptions of the public worse than those miserable ones which accompanied and have followed the Act of 1876.

Neither a Total Prohibition Bill nor any Restriction Bill has, alas! any chance of passing into law for a long time to come, and the latter not a day sooner than the former, unless it be a mere sham and wholly inoperative for its purpose. But there is this essential difference between the two programmes. *Public opinion cannot be educated on the subject by men who treat*

*Vivisection as a thing to be sanctioned under restrictions ;* and, should they ever succeed in passing some measure in accordance with their views, the result would be the cessation of all agitation, the disbandment of the Anti-vivisection Societies, and the enjoyment thenceforward by the physiologists, *first* of such easy terms as the new law may allow, and soon of such unopposed liberty to torture, and teach the art of torturing, as they may please to take. On the other hand when, at last, the public opinion of the nation has been educated by our patient efforts up to the point of recognizing Vivisection to be, as Lord SHAFTESBURY called it “an abominable Sin,” *then* the practice will be absolutely stopped, simultaneously by that public opinion and by an Act of Parliament following thereon ;—stopped utterly, completely, and *for ever*. Were the Restrictionists to carry their point, the Vivisecting Table would remain to all future generations a well-used instrument of research. When we, Abolitionists, carry ours, that hideous implement will be consigned to the museums of chains and “Maidens” and thumbscrews, and will be described by the historian of the future as the barbarous invention of Science in his cruel boyhood ;—to be bracketed with the Rack of the mediæval Judge, and the Stake of the Inquisitor, as things over which men may blush, and angels weep.





# Victoria Street and International Society for the Protection of Animals from Vivisection.

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THE object of the Society is the Total Abolition of the practice of Vivisection as defined in the Report of the Royal Commission.

Those who sympathise with this object are most earnestly entreated to afford the Society all the help in their power, by subscribing, and inducing others to subscribe, liberally to its funds; by obtaining signatures to Petitions to Parliament; and also by disseminating the publications of the Society, and especially its organ THE ZOOPHILIST, wherein the latest information respecting the Anti-vivisection agitation is to be found.

Member's Annual Subscription, 10s. Life Membership, £5. Subscription to THE ZOOPHILIST, the Organ of the Cause, 3s. 6d. per annum, post free.

# Flaws in the Act.

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*(Reprinted with some alteration from the "PALL MALL GAZETTE," November 1st, 1892.)*

SIR,—In your issue of the 27th you printed a fair and reasonable epitome of the Vivisection Act. It is, in fact, a very plausible Act on paper, and seems to provide almost everything required, especially if one assumes—what so many people do assume—that the fact of a man belonging to a noble profession and being eminent as a physiologist is a sufficient guarantee that he will do no wrong. But to make such assumption is, of course, to beg the whole question. The Royal Commission had to admit that "it is not to be doubted that inhumanity may be found in persons of very high position as physiologists," and the whole system of licensing and inspecting is based on that fact. I hope, therefore, that you will allow me to present the matter to your readers from another point of view, in an equally fair and reasonable manner, I trust. The reasons why we object to the Act are as follows:—

1. Because under it are licensed the very men whose deeds and writings a few years ago raised so strong a feeling of abhorrence in the public mind that the Royal Commission was called for. One of the witnesses who candidly admitted that he had "no regard at all" for the animals' sufferings has been regularly licensed since 1884.

2. Because no provision is made in it to limit either in duration or intensity the suffering which a physiologist may inflict when he once has a licence and certificate, and there is nothing to prevent the most cruel experiments on record from being repeated under its sanction.

3. Because the qualifications for obtaining a licence do not depend at all on the applicant's moral character, but wholly on his scientific training; and the members of the scientific societies and the professors who vouch for his competence are themselves vivisectors or in favour of the practice, and thus they practically recommend each other.

4. Because no stipulation is made as to the choice of the inspectors, and all those hitherto appointed have been vivisectors or keen partisans, one of them having called our movement "a mischievous and senseless agitation."

5. Because the Parliamentary Returns, as their wording shows, are compiled, not from personal observation, but from



the statements furnished by the vivisectors themselves. Accounts of horrible experiments published in scientific journals thus never appear in the Returns, or only in such a form that they cannot be identified.

6. Because the drug curari, though not recognised as an anæsthetic, may still be used with or without real anæsthetics; but when the animal is rendered perfectly motionless by curari there is no means of telling whether the true anæsthetic is having any effect or not.

7. Because no licensed person can be prosecuted under the Act without "the consent in writing of the Home Secretary," which is always difficult and too often impossible to obtain. Previous to this Act the vivisector was liable to be prosecuted under Martin's Act, but now he is safe; and thus the Vivisection Act, instead of protecting the animals, in reality protects the offender.

That vivisection thrives under the Act is shown by the last Parliamentary Return, from which we see that since the year 1876, when the Act first came into force, the number of licensed vivisectors has increased from 23 to 180, and that of licensed places from 19 to 66, while the number of experiments made during twelve months has risen from 481 to 3,960, of which those without anæsthetics have increased from 164 to 2,239.

The Act is a bad one because it is not based on any definite principle, and the parties chiefly concerned—I mean the animals—have been considered least. It is in reality a compromise made in the hope of satisfying two opposing parties. To please the humanitarians vivisection is prohibited under heavy penalties; to pacify the physiologists it is again allowed by a system of licences and certificates; and between the two the animals' interests have been left out and they are practically worse off than before.

Yours faithfully,

ERNEST BELL.

20, Victoria Street, S.W.

P.S.—There is one good clause in the Act—namely, that the Secretary of State may call for an account of the "Results" of the experiments, but that unfortunately is precisely what has never been done. Our demands for such results are always evaded.



DO THE INTERESTS OF HUMANITY REQUIRE  
EXPERIMENTS ON LIVING ANIMALS ?

AND IF SO,

UP TO WHAT POINT ARE THEY JUSTIFIABLE ?

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*Paper read at the Church Congress at Folkestone, 1892,*

BY

F. S. ARNOLD, M.B., B.CH. (OXON.), M.R.C.S.

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IN this country experiments on living animals would be stopped to-morrow, if it were not for the sedulous repetition by their advocates, of the statement that they are indispensable to the advance of medicine and surgery, and that to them are due many inestimable benefits conferred on man and the lower animals. The Royal Commission on Vivisection, and the Act which was the outcome of its labours, testify that in this country there is an overwhelming feeling that experiments on living animals for the mere purpose of adding to human knowledge, are unjustifiable. On the continent a robust faith prevails; there very little is said about the benefits conferred or to be conferred on medicine and surgery by vivisection; it is a means of adding to our knowledge, and to look for further justification seems to continental vivisectioners unnecessary and absurd. All this is, of course, only one proof out of many, that in the matter of man's duty to the lower animals, Great Britain is far ahead of any other country. Abroad, the whole matter is regarded with almost complete indifference. The vivisectioners have a perfectly free hand, and notice with amusement not untinged with contempt, the necessity their British colleagues are under of maintaining in season and out of season the transcendent value of that method of research to the medical profession as healers of the sick. Professor Hermann, of Zurich, says: "The advancement of our knowledge, and not utility to medicine, is the true and straightforward object of all vivisection. No true investigator in his researches thinks of the practical utilisation.



Science can afford to despise this justification with which vivisection has been defended in England." That English physiologists cannot afford to despise this justification, is shown by the terms of the resolution proposed by Mr. Jonathan Hutchinson at a meeting of the British Medical Association at Nottingham a short time ago. Mr. Hutchinson moved, " That this meeting records its opinion that the results of experiments on living animals have been of inestimable service to man and to the lower animals, and that the continuance and extension of such investigation is essential to the progress of knowledge, the relief of suffering, and the saving of life." This resolution was carried unanimously. The profession, as a whole, has not been, and is not, as unanimous on the subject of the utility of vivisection as was the Nottingham meeting.

Men in the very front rank, both in the present and former generations of the profession, have expressed their absolute disbelief in the utility of vivisection. Fifty medical men, including one of our first ophthalmic surgeons and a former president of the College of Surgeons, signed the memorial presented last year to Mr. Matthews, praying that a license for vivisection might not be granted to the so-called British Institute of Preventive Medicine. Every one of those fifty signatures is the result of a careful study of the subject, and of honest adherence to carefully formed opinions in the face of much obloquy and misrepresentation. The great bulk of medical opinion on the subject of experiments on animals, on the other hand, is a largely uninstructed opinion. The question whether medicine and surgery have or have not benefited by vivisection, is one that requires separate study, and not one in one hundred of those medical men who give mechanical votes in favour of vivisection at meetings of the British Medical Association and elsewhere, and think no terms of abuse too offensive to hurl at the heads of Anti-vivisectionists, has given the subject the slightest special attention, or can engage in argument on the utilitarian, to say nothing of the moral aspect of the question, without making the most absurd and preposterous blunders. I believe that we owe to vivisection, no discovery of proved value and importance either to medicine or surgery. I have shown that men of the very highest eminence in the profession have been, and are, of the same opinion. It is obviously impossible in

the time at my disposal, to attempt to cover the whole ground proving a negative; I should like, however, to draw attention to three recent failures of vivisection, which I regard as typical of the unscientific, barren, and misleading nature of the practice considered as a method of research. The three failures to which I refer, are the Hyderabad Chloroform Commission, Koch's Tuberculin and Pasteurian inoculation for hydrophobia.

In the year 1889, Dr. Lauder Brunton went out to India to co-operate with Dr. Laurie in investigating the subject of death during the administration of chloroform. The view of most English anæsthetists is that death under chloroform is generally due to failure of the heart's action. In Scotland, on the other hand, it is generally taught that it is the respiratory centre, and not the heart, that is at fault. This Scotch doctrine is that which prevails in India, and it was with a view to putting the matter beyond further controversy, that the Hyderabad Commission of 1889 was appointed. Drs. Lauder Brunton and Laurie performed a large number of experiments on animals. Many of these experiments must, from the nature of the case, have been painless; but some, notably those performed to ascertain whether death ever occurs from shock when an operation is performed during incomplete anæsthesia, must have caused great suffering. The general conclusion come to by the Commission was that the Scotch view was right, the English entirely wrong. A report was drawn up embodying this conclusion, and recommending the observance of certain rules during the administration of chloroform, the most important of these being, that no notice was to be taken of the pulse, but the whole attention concentrated on the respiration. A brisk correspondence at once ensued in the medical journals. Most of the English chloroformists of eminence wrote to express their absolute disagreement with the conclusions of the Commission, and to deprecate and deplore its recommendations. Some went so far as to say that if the rules laid down by the Commission were observed, the chloroform mortality would undoubtedly rise in England. Very soon after the publication of the report there did, as a matter of fact, ensue an alarming increase in the number of deaths under chloroform; whether this increase was *propter hoc* or merely *post hoc*, it is extremely difficult to say, but that there must have been some suspicion of a casual

connection between the report of the Commission and the increase in the mortality, in the minds of English anæsthetists, is, I think, clearly shown by the following extracts from speeches made during the discussion of Anæsthetics, at the meeting of the British Medical Association in 1891:—

Dr. Dudley Buxton, in the course of his speech introducing the discussion, said: "The Commission failed to observe primary heart-failure in its experiments, and this only was it entitled to state. It, however, went beyond this, and stated emphatically that primary heart-failure never occurred either in the lower animals or in man, and practically told the profession that deaths from chloroform need never occur save through carelessness, or when the Commission's directions were not carried out. In so saying the Commission assumed a grave responsibility, which had lulled many persons into a feeling of dangerous security when employing chloroform, and had led to a reckless use of the agent in a way open to the most severe criticism. He thought it the duty of the section to state most distinctly that the clinical evidence before them contradicted the findings of the Hyderabad Commission, and showed its conclusions to be at variance with common experience.

Mr. George Eastes said: "With regard to the report of the Hyderabad Commission, time permitted him to offer only two obvious criticisms. Dr. Brunton founded his opinions respecting the safety of chloroform entirely on his experiments on monkeys and other lower animals. Animals, however, were not human beings, and deductions drawn from the one set of cases could not be rigidly transferred to the other set without considerable reserve. The views of Surgeon-Major Laurie had been so widely published, and their roseate promises of easily attained safety, on the single condition of 'watching the respiration only,' had so enchanted the readers that it might be imagined that the majority of chloroformists were endeavouring to follow implicitly the Hyderabad instructions. Especially it might be thought that this was the case in hospitals, and yet the majority of reported deaths from chloroform still occurred in those institutions."

A passage occurring in a letter from Mr. Silk, anæsthetist at Guy's and the Great Northern Central Hospitals, to *The Lancet*, soon after the publication of the Commission's report, so tersely puts the case against the utility of experi-



ments on living animals, that I cannot forbear quoting it. Mr. Silk says: "Next, as to the regulations for human administrations which the Commission have drawn up. They are, to my mind, utterly inconsequent, entirely fallacious. I cannot possibly admit that any number of experiments on animals ought to outweigh the results of prolonged clinical experience. As Mr. Braine very aptly remarked, one positive experience should, and does, invalidate a thousand experiments."

What, then, has been the net result of the Hyderabad experiments? Either nothing or worse than nothing. If there is any casual connection between the issue of the recommendations of the Commission and the rise in chloroform mortality, then, clearly, those experiments have been not merely useless, but disastrous. If we reject that supposition, the result of the investigations is absolutely nil. The English and Scotch Schools are each "of the same opinion still," and the unanimity of view, which the labours of the Commission were to bring about, is as far from attainment as ever.

The great Koch fiasco affords another very instructive instance of the *ignis fatuus* character of experiments on animals. Everybody remembers the announcement towards the end of 1890, that Dr. Koch had been led by some experiments on guinea-pigs to the discovery of a cure for consumption, and other forms of tuberculosis. Everybody remembers also, though there are probably some who wish it might be forgotten, how the profession went wild over this secret remedy, for such it then was, and rushed to Berlin for supplies of it, to try on the *corpora vilia* of their patients. It is unnecessary, too, to dwell on the gradual attenuation and final bursting of the Koch bubble.

Some very valuable lessons, however, are taught by the history of tuberculin which will bear emphasizing. That history places first of all in a very clear light, the utterly untrustworthy character of the argument from animals to man, and it specially emphasizes the lesson, that, when we are dealing with a new remedy, which may be dangerous, no amount of previous experimentation on animals affords the slightest protection to man. Koch sacrificed so many guinea-pigs in his experiments, that a crematorium had to be built for the destruction of their bodies. His experiments led him to the conclusion that he had discovered a cure for tuber-

culosis. We know now that this conclusion was entirely fallacious and untrue, but its fallacy and untruth were finally demonstrated on the human subject. Man furnished the *corpus vile* on which the crucial experiment was tried out, and tried out on a far larger scale even than Koch's vivisections. The trial resulted in the branding of the nostrum as not only inefficacious but dangerous. In some cases the injections caused death within a few hours, from what was known as the reactionary fever; in others they undoubtedly produced an exacerbation of the existing disease, and materially accelerated the fatal issue. Cases of lupus, a localised tuberculosis of the skin, which disfigures but is not dangerous to life, were converted into cases of acute general tuberculosis. Tuberculin is now an utterly discredited and almost forgotten nostrum; but the thought of the human suffering and disappointed hope, involved in the transition from the wild enthusiasm of 1890 to the cold neglect of 1892, must be surely a very terrible one to its "discoverer." We see, then, that Koch's experiments on guinea-pigs, notwithstanding the vast scale on which they were carried out, led him to absolutely erroneous conclusions. We see, also, that those experiments not only afforded no protection, but were a source of danger to human beings. Notwithstanding the experiments on guinea-pigs, the truth of the matter had finally to be demonstrated on human bodies, and there can be no doubt that, but for the reliance unwisely placed on those experiments, the treatment would have been abandoned much sooner than it was.

Our greatest authorities on logic teach us that the argument from analogy is one that we must use sparingly and with the greatest care if we are not to be led hopelessly astray; yet the enthusiasts for vivisection would have us trust in the main, for the advance of medicine and surgery, to arguments from analogy possessing more than the usual possibilities of fallacy. The danger of arguing from animals to man, and of this whole vivisectional method of research, when its results are sought to be applied in medicine and surgery, is shown most impressively by the history of the Koch fiasco. Here the disease to be treated was one which is unfortunately only too common and universally known, and it was impossible long to obscure the question of the efficacy or otherwise of a particular form of treatment by a cloud of figures. The case of hydrophobia

is very different. Owing to the extreme rarity of the disease, and the great length and variability of the incubation period, the problem is here very much more complicated, and it naturally takes longer before the truth of the matter, as regards the Pasteurian inoculation, becomes apparent to all men, and Pasteur's decoctions of rabbits' spinal cords follow tuberculin to that limbo from which they have only been saved up to now by what Professor Peter, of Paris, aptly calls "an inebriation of figures."

The Pasteurian argument may be briefly stated thus. M. Pasteur has treated so many cases. Taking the mortality after mad dog bites at such and such a figure, so many (to put it algebraically, say  $x$  patients) might have been expected *a priori* to develop hydrophobia and die, but only so many (say  $y$  patients) succumbed. Therefore Pasteur has saved  $x-y$  lives. In the first place, I would point out that we are dealing here with unknown quantities, and that an argument founded on assumed values for unknown quantities is not worth much. We do not know how many patients out of every hundred bitten by rabid dogs develop hydrophobia, still less do we know how many of the patients treated at the Pasteur Institute, had been bitten by rabid dogs at all, or were in the slightest degree in danger of dying from hydrophobia. In face of the overwhelming evidence of the recklessness with which all comers have been treated at the Pasteur Institute, however weak the evidence of rabies in the animal, only those determined to be convinced could base even the most modest statistical argument on such a very rickety foundation as Pasteur's figures. The following letter from a gentleman well known in Manchester, which appeared in the *Manchester Guardian* of July 4th, 1889, explains pretty clearly how the portentous total of cases treated at the Pasteur Institute, on which, be it remembered, the whole Pasteurian argument hangs, has been piled up:—

"TO THE EDITOR OF THE *Manchester Guardian*.

"SIR,—There seems at present to be a wave in this country in the direction of Pasteurism, and it is just possible that the fashion of the hour may hastily and recklessly commit us to a Pasteur Institution in England, with all its attendant cruelty to animals, which in our soberer moments we would ultimately regret.



“I am one of those who have been treated by this system, and at the outset I would like to say that I have seldom come in contact with one whose face carries upon it the impress of patience and benevolence more than does that of M. Pasteur. His treatment, however, is not carried out by himself, but by young surgeons, bred in the school of vivisection, whose hard, callous countenances and rough, peremptory ways, are in strange contrast to those of the philosophical discoverer of the system known as Pasteurism. No matter what your position is, or with whatsoever introductions you come to the Pasteur Institute, you are handed over to these young operators. You take your turn, literally *in formâ pauperis*, in a long queue in a common dispensary; twenty-four times in the course of a fortnight you pass before the youth in charge, in company with about 250 other men, women, and children from all parts of Europe, bare your side, have the essence of mad dog or mad rabbit injected into it, and then you are passed helplessly into the street. Now, one is willing to endure a good deal of what is rough and ready and even degrading if one can be assured against the possibility of hydrophobia, but this is just the sort of assurance which one does not get from a process like this. Personally, I felt far more perturbed by it than by the bite of the dog; and, although I am told one ought to feel scientifically assured by the small proportion of deaths that occur among those treated according to the Pasteur system, yet it does not satisfy me. The manner in which patients are entered in the books seems to me as rough and ready as the process by which they are inoculated. Undoubtedly a large proportion of those operated upon when I was there had not been bitten by mad dogs. One old lady had not been bitten at all; her dog had rubbed her on the face with its paws, not even breaking the skin; she had got nervous, came to Pasteur, and was duly entered and treated. In my own case, I had been bitten by a strange dog in the streets of Manchester. I had no evidence whatever of its being mad. I had immediately sucked the wound, and in ten minutes it was cauterised. My own doctor told me I was absolutely safe. To satisfy importunate friends, however, I consulted other doctors, and was persuaded ‘to go to Pasteur’—*i.e.*, as it turned out, to the young operator from the school of vivisection. I explained carefully to him my case, and quite expected he would dismiss me as too trivial a case to deal

with. I could, however, get no opinion from him, but only the curt reply, 'Do you wish to be operated upon?' and having come so far, as the shortest way out of his unpleasant presence, I said 'Yes,' and was entered in his books, and operated upon accordingly. He seemed only too eager to enter a fresh case. His eagerness to fill his book with cases from this crowd of panic-stricken, nervous subjects, collected from the face of Europe, utterly destroyed my faith in the value of those statistics upon the correctness of which the Pasteur system is now being forced upon us.

"I am not an Anti-vivisectionist, but I do ~~feel~~ that we need much more convincing evidence, not only of the efficacy of the Pasteur cure, but of its immunity from positive danger, before establishing in England an institute for inoculating all and sundry who are bitten by dogs with this awful virus, obtained, be it remembered, by the infliction of terrible suffering on dumb animals.

"I am, &c.,

"A MANCHESTER CITIZEN.

"July 4th, 1889."

I should like briefly to examine some of the actual figures put forth in support of Pasteur in an article by Dr. Armand Ruffer in the *Nineteenth Century* for December, 1891, as I think it can easily be shown that the pro-Pasteurian argument involves us in the most preposterous absurdities, and amply justifies Professor Peter's description of it as a veritable inebriation of figures. Dr. Ruffer tells us that 8,009 cases were treated at the Pasteur Institute from 1886 to 1889. Of these 79 died, giving a percentage of mortality of 1. As Dr. Ruffer estimates the minimum mortality in cases untreated by Pasteur at 15 per cent., he is led to the conclusion that M. Pasteur has saved 1,121 lives. Now, if we follow these figures out to their logical issue, we arrive at some very curious conclusions. Taking Dr. Ruffer's estimate of mortality and M. Pasteur's number of cases treated, we find that had the Pasteur Institute not been in existence, there would have been at least 1,200 deaths among the 8,009 cases. Now, a considerable majority of these cases are French, but we will estimate the French cases at only 50 per cent. We come, then, to the conclusion that there would have been a French mortality of 600 during the four years, or an annual

average of 150. Now the French Conseil Supérieur de L'Hygiène gives us statistics of the hydrophobia mortality in France from 1850 to 1885, from which we find that the average annual mortality was 23, and the highest mortality in any one year 66.

The Pasteurians would thus have us believe that if M. Pasteur had not been at work in the Rue d'Ulm there would have been every year since 1885 a French hydrophobia mortality more than double that occurring in the most fatal year from 1850 to 1885. I am surely not going too far when I say that such a conclusion is grossly at variance with all reasonable probability, and requires far better evidence, before it can be accepted for a moment, than the recklessly compiled figures of the Pasteur Institute.

In dealing with a subject so bristling with possibilities of fallacy as a prophylactic treatment for hydrophobia, the only safe way to arrive at a conclusion is to look at the matter in a broad and general light, and ask, Has this treatment, as a matter of fact and not of contingency, lessened hydrophobia mortality? If we ask this question of Pasteurian inoculation we must answer it in the negative. In France, from 1850 to 1885, an average of twenty-three persons died yearly of hydrophobia. From 1885 to 1890 inclusive, there was a yearly average of thirty-nine. In England the total number of deaths from hydrophobia in the period 1880 to 1884 inclusive was 152, while those from 1885 to 1889 (years when many bitten people were sent to Pasteur) was 159, giving a full addition of one to the yearly average.

In all, close on 240 persons have died of hydrophobia, after undergoing Pasteurian inoculation. Failure to prevent the development of hydrophobia is, unfortunately, not the gravest charge that can be brought against M. Pasteur's treatment. It has beyond all doubt caused the death of several patients. Professor Peter was the first to call attention to the death of several of Pasteur's patients from a form of hydrophobia hitherto unknown in human beings, but closely resembling that which M. Pasteur produces in his laboratory rabbits. Professor Peter's terrible indictment, "*M. Pasteur ne guérit pas la rage, il la donne*," has never been met, and the responsibility of those who, after failing to bring about the establishment of a Pasteur Institute in this country, are doing their best to inflict one on India, is a very grave one. One of the most



striking cases of death from paralytic rabies after Pasteurian inoculation is that of a French rural postman, named Rascol, who was bitten on the 28th February, 1889, at the same time as another man, by a dog suspected of being mad. As Rascol wore two pairs of trousers, the bite did not penetrate his clothes. The other man was, however, badly bitten. Neither of the men wished to be sent to the Pasteur Institute, but Rascol was compelled by his superiors to go. From the 9th to the 14th of March he was submitted to the inoculations. On the 26th he returned to his employment. On the 12th of April he developed grave symptoms—paralysis, pains at the points of inoculation, and not at the place of the bite, for as a matter of fact he had not been bitten, and on the 14th he succumbed to the paralytic rabies with which M. Pasteur had inoculated him. The other man, who was severely bitten at the same time as Rascol, flatly refused to undergo the Pasteurian treatment, and is still alive and well.

In each of the cases on which I have touched, the matter was introduced to the public with a great flourish of trumpets as a final and clinching proof of the value to humanity of experiments on living animals.

But "Man never is but always to be blest," and the supporters of vivisection are still waiting to be blest with their crucial and conclusive case. The three complete and disastrous failures to which I have drawn attention surely demand considerable compensation, before even the most crudely utilitarian justification can be claimed for experiments on living animals.

The practice of vivisection seems to me absolutely incompatible with any true or high conception of the *ἦθος* of the medical profession. Our *rôle* is to save from suffering and death, not to inflict them. We have, of course, often to inflict suffering, but it is done with a view to save the individual from death or a greater suffering. We deal with patients, not with victims. The vivisector, on the other hand, inflicts suffering, not for the benefit of the sentient being on whom it is inflicted, but for the prospective benefit of another. *Qua* vivisector, he deals with victims, not with patients. I cannot see how it can be denied that the habitual dealing with victims, must have, at any rate, in many cases, a disastrous effect on the *morale* of the

physician. How can we expect any but the most exceptional of men, to pass daily from the vivisectional laboratory to the hospital ward, and carry with them to the latter place, none of the ideas and conceptions as to the rights of the individual which prevail in and govern the proceedings of the former? I do not of course mean to charge all vivisectors with a neglect of the individual interests of their patients, but that the danger I have alluded to is real, is shown by the cancer-grafting experiments in Germany and France which horrified the world about a year ago. There undoubtedly prevail on the Continent, far more lax notions as to what is and what is not justifiable in the treatment of hospital patients than the public opinion of the profession would for a moment tolerate in this country. Is it unreasonable to connect that greater laxity with the utter levity with which the sufferings of animals are as a rule regarded abroad, and the absolute freedom with which vivisection is everywhere carried on? We are asked to say how far we would allow experiments on living animals. As I believe the whole method to be, scientifically speaking, absolutely unsound and untrustworthy, I see no reason to allow them at all, and certainly so long as English physiologists are found subscribing to memorials to such men as Claude Bernard, Paul Bert, and Chauveau, and so long as it is impossible to get from them an admission that there is any point of agony beyond which it is immoral and unjustifiable to go, those who have taken this matter up, after mature consideration and careful study of the facts, are not likely to withdraw or compromise their demand for absolute prohibition. We may, at any rate, fairly demand that the supporters of vivisection shall take the initiative and show how, if the practice is allowed at all, gross abuses can possibly be prevented. The present system, under which the inspection under the Act is placed in the hands of thick and thin supporters of vivisection, who describe the inoculation of such diseases as tubercle anthrax and tetanus as operations involving no more pain than the prick of a needle, can satisfy no one, and is a grotesque and unseemly farce.

Man's interests do not begin and end with his body. Health and knowledge are two most excellent and desirable things, but not even they are worth pursuing at the cost of justice and mercy. The modern tendency to deify them, to run after

them as the supreme good, and to justify any and every means by which they are sought is, to my mind, full of evil augury. Fortunately, there are not wanting signs of a reaction towards the conviction that the moral law is, after all, operative here as elsewhere, that a wrong and an injustice does not cease to be such because it is claimed that it is perpetrated in the cause of knowledge, or of health, and that in the long run our store of those blessings is likely to be the more increased, the more closely we adhere to legitimate means in their pursuit.

The history of human progress leaves no doubt as to the ultimate, though perhaps long delayed, issue of this struggle. The movement is slow, but what there is, is in the direction already traversed by mankind in the abolition of slavery and religious and judicial torture, and in the recognition that animals have rights and mankind corresponding duties towards them, involved in Martin's Act. Vivisection is most surely doomed, though appeals to human selfishness may delay the inevitable and final condemnation. When that comes, may the Church and all bodies of Christians be able to boast that they have played their fitting part in helping to abolish a great cruelty and injustice.

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# OUR MEANEST CRIME.

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## A PAPER

*Read at the Church Congress at Folkestone, 1892,*

BY

JOHN H. CLARKE, M.D., &c.

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# OUR MEANEST CRIME.

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Dr. CLARKE read as follows:—

To the question propounded to this meeting, "Do the interests of mankind require experiments on living animals?" I beg to return an answer in the negative. My reasons I will now lay before you.

For the judicial mind it is of the utmost importance to be able to distinguish between opinion and fact. To-day the Church of England has, in a manner, accepted judicial functions on a most urgent question, and, at the outset, I beg of the tribunal to keep well in mind the importance of this distinction.

When a student enters the portals of a medical school, he finds there placed over him men of learning, endowed in his imagination with all possible knowledge in their several departments, and endowed in solemn earnest with the power of professional life and death so far as he is concerned. He finds these men, his demigods, exercising certain privileges, teaching certain doctrines and holding certain opinions which he must assimilate and be able to reproduce if he is to acquire his license to practice. Sent to these men by his parents without any hint that there may be a question as to the righteousness of anything they may do or say, how is a young boy to avoid being absorbed in the life and opinions of his school? Escape is all but impossible.

I confess I shared the common fate. I learned to look upon vivisection as a horrible necessity; but yet, a necessity, I learned to look upon the vivisectors as men who were the leaders of the profession, and those from whom such light and help as were attainable in the dark and devious ways of medicine were to be sought. It is true I saw but little of the practice. I saw frogs have their heads cut off that their still living muscle; might be dissected out and experimented on before the class. Here the pain was only momentary, death being instantaneous; but the method of handling the creatures was revolting—though, as I imagined, necessary. I saw the liver cut out of a living mouse, and boiled immediately, to show to students

that in the fresh state that organ contained no sugar; and it did not occur to me then that this was a perfectly unnecessary demonstration. A pigeon which had had part of its brain removed I also saw, and I supposed that the exhibition of this poor creature, still living, but robbed of all the brightness of its existence, was a necessary method of teaching me the functions of the brain. I did not then dream of questioning the prevailing opinion that experiments on living animals were necessary and therefore right.

The first years of practice outside the shielding walls of a hospital and medical school are years of disillusionment to the medical fledgling. Such they were to me in many particulars. The opinions I had absorbed met with many a rude shock when brought face to face with actual facts. When I came to deal myself with sick people I found that the men and the books I had expected most help from were the least able to give me what I wanted; and of sheer necessity I found myself compelled to break loose from opinion in various directions, and set myself steadily to search for the facts.

I trouble you with these few personal matters because I wish to show you how medical opinion is generated and transmitted, and how it lives in the minds of those who do not happen to be so constituted that they can break loose from its fetters, or from some of them.

And now I must add a warning. Medical opinion is never so much to be suspected as when it is unanimous. Doctors, you know, have a proverbial right to differ: it is one of our sacred privileges which we exercise without reserve in particulars; but in generals we are frequently unanimous; and then our unanimity is truly wonderful. For ages it was the unanimous opinion of the Faculty that blood-letting was the chief method of restoring the sick to health and of keeping the healthy sound; though Moses, a better physiologist than them all, had thousands of years before declared that the blood was the life. Scarcely less unanimous were the profession in the opinion that next in value to copious and repeated blood-lettings as a remedial agent came mercurialisation—an opinion epitomised by medical wisdom in the pretty phrase, “salivation is salvation.” When Harvey completed, so far as he could, the hypothesis of the circulation of the blood, the medical profession was unanimous in the opinion that he was wrong: the Messieurs

Purgon and Diafoirus of the time laughed him to scorn, and stigmatised him and the few who stood by him with the nick-name "Circulators." And now we have the British Medical Association declaring itself at Nottingham equally unanimous in the opinion that vivisection, or experiments on living animals, have been of "inestimable service to man and the lower animals, and that the continuance and extension of such investigations is essential to the progress of knowledge, the relief of suffering, and the saving of life."

Such is the unanimous British medical opinion regarding vivisection: we will test it presently by comparing it with the practical results brought forward at the Congress which gave it expression. But before doing so, I want to make one or two points clear. In the first place, the common idea that physiological discoveries are made by simply opening up a living animal and looking into it, is completely erroneous. It is nothing so simple. Vivisection means tedious and difficult observations of animals after they have been dissected alive, and whilst they are still living; and so complicated is the process that it is the rarest thing for two experimenters to be agreed about the results of the same experiment. The next point I wish to insist upon is that there is no necessary connection between physiological discovery and improvement in medical practice. How was it that wholesale blood-letting was put a stop to? Was it by Harvey's discovery of the circulation? Not at all. It was not until 200 years after Harvey's time that the profession gave it up, and then it was not the physiologists or the vivisectioners that introduced the innovation. To this day the most popular of medical journals bears the name of the sanguinary implement on its title-page. The third point is, that the results of experiments on animals cannot be taken as any guide to what will happen if the same experiments are tried on man. So far from vivisection saving human beings from being experimented upon, it actually necessitates it; and one doctor a few years ago, explicitly stated, in a letter published in the *Standard*, that hospital patients existed for that purpose; they were, said he, "*corpora vilia*," paying for gratuitous medical services by affording in their persons a field for the experimenting proclivities of their medical attendants.

I will now return to the Nottingham Congress. After that very sweeping resolution we should naturally expect that in



the proceedings of the Congress there would be, as the outcome of vivisection, some great improvement in medical practice announced to sustain it. But there was nothing of the kind. In the department of Therapeutics (that is, the "curing" department proper as distinguished from all the "knowing" departments) there had been a grand committee appointed the previous year, with Professor W. T. Gairdner at its head, and its report was—Absolutely nothing done!

In the department of Pharmacology—the science of studying drug action by means of vivisection—a great deal was done. A certain Dr. Chadbourne, of the United States, read a paper on the pharmacology of a new kind of cocaine, having a slightly different chemical composition from the ordinary kind. (And here I would point out parenthetically the perfect free trade that exists among vivisectors—British, American and Continental. The American Dr. Chadbourne's experiments were performed in Berlin, through the "kind permission" of Berlin vivisectors, for the edification of a Congress of British doctors.) His experiments were made on frogs and rabbits chiefly. These animals were poisoned with the drug and then dissected alive. They had their brains and spinal cords exposed, their spinal cords cut producing paralysis; their vagus nerves dissected out, cut and stimulated; and some of them, in addition, were put under the influence of the "hellish" *curare*, as Tennyson has fitly called this drug, which heightens sensation, whilst it prevents the animal from exhibiting any sign of what it feels. Mark what followed! The next step was—not to cure, but—to experiment on human beings. Through the "kindness" of a professor of surgery, Dr. Chadbourne was allowed to experiment at will on the *corpora vilia* of the professor's hospital patients. He does not appear to have hurt them much—he dropped the drug into their eyes, and found it behaved very much in the same way as the ordinary cocaine. But what had this to do with the spine and nerve cuttings and curarising of rabbits and frogs? Nothing at all. If he had never touched an animal, but had simply dropped a little of the drug into his own eye, as he did into those of the hospital patients, he could have found out more than all his cruel experiments on the animals could have told him, namely, how it affected sensation.

This is a typical example of the absence of connection between pharmacology and therapeutics fully illustrated in

Dr. Lauder Brunton's book on the subject. When this ponderous tome came out it was said by one of the medical journals to mark a new epoch in medicine. More's the pity for medicine! At the International Medical Congress of 1881 I ventured to protest against the practice of vivisection when employed for the study of drug action. Dr. Brunton was so moved by my heretical conduct that he came to me after the meeting, and in all honesty and good faith expostulated with me on what I had done. A correspondence between us followed, and in his concluding letter he said that the study of drugs on the entire organism was too complicated an affair to make anything of; that their action must be studied on each part separately, as in Dr. Chadbourne's research. But the use of it all? Search Dr. Brunton's book and see. I defy anyone to find any connection between the experiments and the uses of the drugs that will stand analysis. Generally it is like this—which actually occurs in the book: *Stavesacre*, we are informed, kills animals by paralysing their vagus nerves. And its use? It is good, says Dr. Brunton, for killing lice! We are much obliged to you, Dr. Brunton, for the information, but most village dames knew that long before you were born!

Now let us come to Pathology—the science of disease. What has vivisection done to advance that during the year? Did the Nottingham congressers teach the world anything useful on this head? Professor Victor Horsley, at the dispensary for sick animals, over which he formerly presided, has done an enormous amount of cutting up of living animals in the supposed interests of pathology, and his labours in this department earned for him the position of President in the Pathological Section at the Congress in question: and yet, in his presidential address he said: "Pathology as such is almost unknown among us;" and as a remedy for this state of things he urged the necessity for more vivisection. Speaking on a paper by Dr. Vaughan Harley, who as Grocers' Research Scholar has been carrying out a series of exceedingly painful pathological experiments, Dr. George Harley, another eminent pathologist, entirely endorsed the president's remarks. "More vivisection" is the unanimous demand of the Congress as the only possible remedy for all medical shortcomings. The daughters of the horseleech are not to be compared to these gentlemen in the insatiate cry, "give, give." Nothing, or, rather, worse than nothing,

comes of it all; but that makes no difference. Theirs is the argument of the venerable seller of matches; they may lose on every experiment, but it is the quantity that is going to pay. Therefore, "give, give," is their cry.

Let us look a little at Dr. Vaughan Harley's work, paid for by the City Grocers, and carried out at Christiania and Leipsic for the delectation of the British Medical Congress.

The sweetbread is a very deeply-seated organ, and to cut it out, or experiment upon it, necessitates the opening up of the abdominal cavity, the displacement of internal organs and a great deal of cutting and tying of deep-seated vessels and nerves. In Dr. Harley's research sometimes the whole of the gland was cut out; sometimes part of it only. When the animals recovered from the operation they suffered from thirst and hunger, and slowly and miserably died. No good came of these experiments. We are no better able to treat diabetes, the disease they were suppose to elucidate, than we were before. All that the experimenter can say after the pain he has inflicted is this: "There is no disease richer in clinical and experimental literature than diabetes mellitus, and certainly none that has had a greater diversity of opinion expressed regarding its pathology." Quite true! The more experiments, the more uncertainty, the more darkness; therefore, "give, give"!

The same vivisector related at the same Congress another research on the "Pathology of Obstructive Jaundice." In this investigation, in order to keep the animals (dogs) alive as long as possible, his first endeavour, he tells us, was "to restrain, as far as possible, the activity in the dogs' digestive functions whilst they were under the influence of the operations." That is to say, he starved them. He gave them no food for from ten to seventy-two hours before they were operated on, and withheld it after the operation for from one to seven days. The operations consisted in opening the abdomen and tying the bile ducts and the thoracic or lymph duct. Out of nine of the animals so operated on five died from rupture of the ligatured bile duct, causing peritonitis, and two more died of peritonitis without rupture of the bile duct. And for all this dreadful work no human being is, or is likely to be, one whit the better.

That you may form an idea of the horrible torture involved in these experiments, I will refer to an incident upon



which I commented some years ago. A surgeon who was so proud of his achievement that he wrote an account of it in the *Lancet* and afterwards urged it in a letter to the *Times* as a strong argument in favour of a "free vivisection-table," operated on a dog, cutting out part of its bowels, stitching the ends together, and then stitching up the opening he had made in the abdominal wall. The operation was done under anæsthetics, and therefore is called painless. But mark the fraud of anæsthetics as applied to vivisected animals. Operations on the abdominal cavity entail at the best very much after-suffering, even when the patient receives the most assiduous nursing. But what about the nursing of a vivisected animal? It is left fastened to a board—generally the board on which it has been carved. The second night after the operation in the case in question, the animal lay there, crying in pain. Its cries attracted another dog in the laboratory, which was waiting the same fate. This one broke loose from its tether, and went to help its wounded companion. It first gnawed through the cords that bound it; and then, thinking apparently that the dressings were the cause of the pain, the dogs tore them off. Then they ran round the laboratory together through the night, until the wounded one dropped from exhaustion, and was found in a dying condition from peritonitis at 10 o'clock the next morning, when the surgeon visited the laboratory. This incident will help you to realise the sufferings of the animals even in the cases in which anæsthetics have been used for the first part of the operation. Hence it is that I say that the use of anæsthetics by vivisectors is to a very large extent a fraud on the animals.

Medical history is full of examples of the contrast that exists between the unanimous opinion of doctors as to the value of vivisection, and the facts on which that opinion is supposed to be based. I need only refer to Dr. Koch's supposed consumption cure. In the laboratory he gained from experiments certain information of the behaviour of guinea-pigs in relation to the poison of consumption. I do not deny that "information" may be gained from these experiments; but I do maintain that the information is either pernicious, or else is obtainable by innocent means. Herophilus is said to have discovered from the vivisection of 600 criminals that man has a pulse. He could have discovered this by merely feeling

his own wrist. Koch by vivisection gained information about guinea-pigs and consumption: what was the good of it? His laboratory conclusions proved fatal to numbers when tried in hospitals, as Virchow and others have abundantly proved. Again, we have heard much of the extraction of brain-tumours as being an outcome of experiments on animals, not to say on living human beings—hospital patients pressed into the service of vivisectioners. On the other hand, clinical observers foretold that the data for such operations was so uncertain that surgeons were not warranted in performing them, and this the event proved. The first two patients on whom the operation was tried were killed by it; and so many others have followed, that Sahli, the latest authority on the subject, condemns the operation and supports the clinical observers.\*

It may be asked, how can an intelligent and in most respects humane profession be so far wrong? I answer, It is dominated, or intoxicated,—hypnotised, if you will,—by the vivisectioning spirit. If the profession were quite sober on the question, how would it be possible for responsible men like Sir James Paget and Sir Joseph Lister to make the perfectly outrageous statements they have done about Pasteur's proceedings? Sir James said at the Mansion House, when advocating the establishment of a British Pasteur Institute, that M. Pasteur had saved the lives of 900 persons from dying of hydrophobia as certainly as if he had snatched them from drowning. Sir Joseph in his speech in deputation to Sir M. Hicks-Beach modestly put the figure at 12,000. These statements are simply absurd; there never was anything like such a mortality possible; and yet so dominated is the profession by the vivisectioning spirit that no word of contradiction has gone forth from its responsible organs. In defence of vivisection no statement is too outrageous. What are the facts? In

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\* The proceedings of the recent "International Congress of Experimental Psychology" fully sustained this view. Professor Victor Horsley having read some notes on "Experiments on the Degree of Localisation of Movements and Correlative Sensations," the *Provincial Medical Journal* says: "A lively discussion ensued, in which Professors Hitzig and Henschen insisted on the great difference between man and the lower animals."

France, the country most affected by Pasteur's experiments, the mortality from hydrophobia has actually *increased* since he began to inoculate for it. This is easily accounted for. Professor Peter and Dr. Lutaud have shown that Pasteur has actually killed a number of his patients by a disease of his own invention—paralytic rabies. Professor Horsley has proved that the inoculations were fatal in one of the English cases; and I have ascertained that in another the symptoms with which the patient died were entirely unlike those of ordinary hydrophobia and corresponded accurately with those of the Pasteurian variety.

We are often told that it is only eminently scientific persons who can understand this question of experiments on living animals. I admit that it requires a certain amount of technical knowledge, not so very difficult to attain, to be able to unravel the complicated relations of medical fact and medical opinion, and to distinguish clearly the one from the other: but this has now been done, and the question itself is simple enough for the humblest understanding to decide.

If vivisection were of any real benefit to mankind, surely it is human vivisection and not that of animals that would be the most valuable. But nothing good has come of human vivisection. Our modern Herophili ask for animals only, though they do not scruple to use human material, with or without consent, when chance gives it them in the hospital or workhouse infirmary. Such has been the history of the cancer-grafting cases; of the victims of the Koch consumption "cure;" of Mary Rafferty and the man Rusticucci, whose brains, exposed by accident, proved too tempting a field for the experimenting proclivities of their medical attendants; of the victims of the nitrite of sodium experiments; of the boy, aged 10, "who had never in his life tasted alcohol," and who was repeatedly dosed with it by his doctor that the latter might learn the effect of alcohol on the bodily temperature; and of the man whom the same doctor made "dead drunk" for the same purpose. It must be so; animals differ so greatly from one another and from man that experimenters are obliged to experiment on human beings in the end. They do not admit this; they say, give us a free vivisection table and we will save you from suffering. That is their plea. What does it amount to?



They ask to be allowed to inflict on man's poor relations—not death, which is the common lot of man and animals alike, and which need not be painful, but—unlimited pain, the worst of all evils known to them, to save man from suffering pain, which may be to him no evil at all, and which is often the direct consequence of his own wrong-doing. Shelter yourselves from suffering, they say in effect, behind the quivering bodies of our innocent mutilated victims: rob the poor man of his one ewe lamb to save your own teeming flocks. If it were true—which it is not—that they could perform what they promise, could the Church of England hesitate to pronounce judgment on a plea so infinitely mean? A recent diocesan conference decided by a large majority that it did not know enough about the question to decide, and it evinced little inclination to provide itself with the information necessary. The present meeting is an assurance that the Church at large does not endorse this attitude. The great and powerful Church of England cannot afford to play the Gallio on one of the most urgent moral questions of our time. Should the cultivated and refined refuse to decide, the unlearned toilers of the land will rise up in judgment against them and will decide it for themselves.

In spite of all its faults, our country has on former occasions pioneered the world in the cause of freedom. The masses of the nation are gradually informing themselves on the question of vivisection, and are becoming less and less inclined to be blindly led by the class opinions of the medical profession. Presently they will speak with a voice that will not be mistaken. Our country—I trust with the Church's help and guidance—once more will lead the world in the pathway of right-doing, of winning justice for the oppressed, and beginning at home, will purge itself from this, the meanest of all its crimes.



# MEDICAL OPINIONS ON VIVISECTION.

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PROFESSOR LAWSON TAIT.

“Like every member of my profession, I was brought up in the belief that by vivisection had been obtained almost every important fact in physiology, and that many of our most valued means of saving life and diminishing suffering had resulted from experiments on the lower animals. I now know that nothing of the sort is true concerning the art of surgery; and not only do I not believe that vivisection has helped the surgeon one bit, but I know that it has often led him astray.”—(*Birmingham Daily Post*, December 12th, 1881.)

SIR WILLIAM FERGUSSON, F.R.S. (SERGEANT-SURGEON  
TO THE QUEEN).

“I am not aware of any of these experiments on the lower animals having led to the mitigation of pain or to improvement as regards surgical details.”—(Evidence before Royal Commission, 1876.)

SIR THOMAS WATSON, M.D. (EX-PRESIDENT ROYAL  
COLLEGE OF PHYSICIANS).

“One of the greatest physicians who ever lived . . . . Sir Thomas Watson, told me himself, not long before he died, that young men had to unlearn at the bedside what they had learnt in the laboratory.”—(From speech of Canon Wilberforce, June 22nd, 1892, reported in the *Zoophilist*, July, 1892, p. 80.)

SURGEON-GENERAL CHARLES GORDON, C.B.  
(HONORARY PHYSICIAN TO THE QUEEN).

“I hold that the practice of performing experiments upon the lower animals, with a view to benefiting humanity, is fallacious. . . . Whether the young men who are now entering as medical officers in the army are vivisectioners or not, I do not know; I hope for the sake of our soldiers that they are not.”—(Speech at the Westminster Palace Hotel, June 22nd, 1892; extracted from the *Zoophilist*, July, 1892, p. 84.)

DR. CHAS. BELL TAYLOR, F.R.C.S.

“The practice of cutting open living animals, literally the practice of dissecting them alive, in the supposed interests of science, which is called vivisection, is in my judgment to be condemned.

“*First*—Because there is really no necessity for it.

“*Second*—Because it has been proved to be not only useless, but misleading.

“*Third*—Because it takes the place of other methods of

study and observation which are infinitely preferable, and to which no one can possibly object; and

“*Fourth*—Because it is a gross and cruel abuse of the power which God has given us over the lower animals, and virtually a surrender of our chief claim to mercy for ourselves.” —(Speech at Nottingham, November 29th, 1893, reported in the *Zoophilist* December, 1893, pp. 207-8-9.)

#### DR. JOHN BOWIE.

“Having given considerable study to the action of drugs upon the different organs of the human body, I feel constrained to raise my voice in direct opposition to those who are palming upon an ignorant nation a vile fraud under the name of science. . . . This barbarous and misleading practice, more than two thousand years old, has within recent years rapidly developed into a huge system of cruelty, is now licensed by law, and enjoys the patronage and encouragement of the University authorities.” —(Speech at Edinburgh, October, 1880. See pamphlet published by D. Macara, 6, Cockburn Street, Edinburgh.)

#### DR. F. S. ARNOLD, M.A.

“I hold the torture of animals, whatever the end in view, to be immoral and degrading, both to those who take part in, and those who sanction it, and I think experience has shown that if vivisection is once admitted as a method, it is impossible so to regulate its practice by legislative enactment as to prevent torture. I believe that vivisection is a barren and misleading method of research, from whose practice no benefit has accrued to humanity which would for a moment be considered by an unbiassed person, cognizant of all the facts, to outweigh the animal suffering and human degradation it has caused and still causes.” —(From article in *The Animals' Friend*, January, 1895.)

#### DEPUTY SURGEON-GENERAL THORNTON, M.B., B.A.

“Experiments on human beings would unquestionably afford more valuable and trustworthy results than those obtained by the vivisection of animals, and, granting that the end justifies the means, I do not see how such experiments can be reasonably objected to. . . . The truth is, the end does not justify the means, and all such methods are immoral and ought never to be adopted.” —(Letter in the *Echo* (London), March 12th, 1895.)

#### DR. ED. BERDOE.

“Multiply (my) opponents by a million, and they would neither convince me that scientific cruelty is lawful and right, nor that vivisection is the true way to advance the healing art.” —Letter in *Bristol Mercury*, March 8th, 1895.)



## DR. JOHN H. CLARKE.

"Do the interests of mankind require experiments on living animals? I answer in the negative."—(Address at Church Congress, Folkestone, 1892.)

## DR. ED. HAUGHTON.

"My indictment against vivisection (implying painful experiments such as are daily used upon dumb animals) is:—That they are inconclusive. That they are cruel beyond all reasonable excuse, and shameless in their savage brutality. These experiments are sometimes apparently purposeless, often unnecessarily repeated, and occasionally silly, and without even the possibility of adding to our knowledge on account of their own inherent fatuity. They are gradually converting the old art of healing into a system of corrupting the blood with the most revolting concoctions."—(From speech at Nottingham, November, 1893, reported in the *Zoophilist*, December, 1893, p. 201.)

## DR. EDWARDS CRISP.

"I am rather a penitent upon this question. I have been a vivisector for some time. . . . as I advanced in age, and I hope in wisdom, I saw fit to alter many opinions that I had formed at an earlier period; and I have come to the conclusion that vivisection as practised, especially on the Continent, has not led to the good that its advocates believe."—(Evidence before Royal Commission, 1876.)

## JAMES MACAULAY, M.D., F.R.C.S.E.

"There are thousands of medical practitioners who have not committed themselves to the advocacy of vivisection. . . . I wrote to my old master, Dr. Christison, asking his opinion, and in his reply he said:—'I object to all public demonstrations by experiment on living animals and have always done so. I admit that students ought to be discouraged in repeating experiments already so sufficiently carried out as to convey all the information of value which they are capable of supplying.'"—(From an article in the *Animals' Friend*, February, 1896.)

## STEPHEN TOWNSEND, F.R.C.S.

"Before I personally witnessed any such experiment, I had already studied for three years in a London hospital, and had passed the two examinations in physiology held by the Royal College of Surgeons. My impressions, therefore, were not those of a raw novice, but of a student who had mastered that groundwork in physiology demanded by the qualifying medical bodies as necessary for a medical practitioner, and of a student who, fresh from one system of instruction, would be quick to perceive and appreciate the advantages and disadvantages of another. I contend that these experiments, from a moral point of view, are criminal, inasmuch as they often involve the unnecessary torture of sensitive animals, and that

from a scientific and didactic point of view they are worse than useless.”—(From an article in the *Animals' Friend*, April, 1896.)

ARTHUR A. BEALE, M.B., C.M.

“I oppose vivisection from a strong conviction—first, that it is a course entirely at variance with true culture and the progress of society; second, that it is a method of research entirely unscientific; third, that it accumulates facts which, as honourable members of my own profession have said, are not only useless but directly harmful, as they only confuse the mind; fourth, on moral grounds. Besides being an unnatural procedure, it is one that is pernicious alike to the experimenters and to society, and an abuse of our powers over the animals.

. . . The claims made on behalf of vivisection are misleading and contradictory. It is such a practice as this which makes medicine an art perhaps, a science *never*. We have lost the key that would permit us to know anything of disease *per se*. This age of medicine is one of dry empiricisms and guess-work. No one can say for certain what is the cause of disease. We make some shrewd guesses and are satisfied, till a more shrewd guess upsets us. We *think*, but we do *not know*! Vivisection does not help us, it only makes the confusion worse by adding contradictory evidence. This is not science. It deals with superficial facts, whilst the real operations are working beyond the ken of the medical five senses.”—(From an article in the *Animals' Friend*, July, 1896.)

PROF. LAWSON TAIT.

“It is now nearly a quarter of a century since I was startled into a review of my own work on the surgery of the arteries, and led to the humiliating recognition of the fact that the conclusions obtained from a series of experiments on animals could not be applied to man, and that our efforts to adapt them were leading us into serious surgical blunders. An extended investigation into which I was further attracted by the rising discussion of this question forced upon me the opinion that Syme and Fergusson were right when they stoutly asserted that surgery had in no way been advanced by experiments on animals. I knew these two men intimately. . . . They were the two greatest surgeons I have ever known. . . . I decide altogether against vivisection, because it is inherently objectionable from my religious point of view, because it is clumsy and inexact, and because it has very frequently, if indeed it has not always, been found altogether misleading.”—(From an article in the *Animals' Friend*, August, 1896.)

DR. GEORGE MACILWAIN, F.R.C.S. (the late).

“Vivisection is, to my mind, a desecration of the highest objects to which the scientific mind can aspire, to the lowest and most barren modes of inquiry.”—(*Vivisection*, p. 139. Hatchards, Piccadilly.)



DR. A. LUTAUD (EDITOR-IN-CHIEF OF THE *Journal de Médecine de Paris*.)

"M. Pasteur's method of treating hydrophobia appears to be founded upon untrustworthy experiments and unsound reasoning. And I now add to this my conviction that its practical result has been an increase in fear and death, and I think more strongly now than ever that this method ought to be rejected and condemned in the interests of humanity and science."—(*Hydrophobia in Relation to M. Pasteur's Method*, p. 19. Whittaker and Co., Paternoster Square.)

SIR CHARLES BELL, F.R.C.S., F.R.S. (the late).

"Experiments have never been the means of discovery, and a survey of what has been attempted of late years in physiology will prove that the opening of living animals has done more to perpetuate error than to confirm the just views taken from the study of anatomy and natural motions."—(From *The Nervous System*, Part II., p. 184.)

DR. GEORGE HOGGAN (the late.)

"I venture to record a little of my own experience in the matter, part of which was gained as an assistant in the laboratory of one of the greatest living experimental physiologists. In that laboratory we sacrificed daily from one to three dogs, besides rabbits and other animals, and after four months' experience I am of opinion that not one of those experiments on animals was justified or necessary. The idea of the good of humanity was simply out of the question, and would be laughed at, the great aim being to keep up with, or get ahead of, one's contemporaries in science, even at the price of an incalculable amount of torture needlessly and iniquitously inflicted on the poor animals."—(Extract from letter to *Morning Post* (London) February 2nd, 1875.)

DR. JOHN M. FOX (MEDICAL OFFICER OF HEALTH,  
MID-CHESHIRE DISTRICT).

" . . . . No useful end has been attained by this practice, and . . . . by far the larger number of experimental tortures are inflicted for no practical or useful purpose. . . . It is not by any such unnatural procedures that valuable medical discoveries in the interests of humanity have been made. What is wanted is the rare intelligence and foresight of the discoverer. This may not be produced in every generation or every school, but it cannot be manufactured by any industrious multiplication of experimental tortures. . . ."—(Letter in *Manchester Guardian*, January 18th, 1894.)

DR. CHARLES CLAY (the late).

"As a surgeon, I have performed a very large number of operations, but I do not owe a particle of my knowledge or skill to vivisection. I challenge any member of my profession to prove that vivisection has in any way advanced the science



of medicine or tended to improve the treatment of disease.”—(Letter in *Times*, July 31st, 1880.)

DR. JOHN FERRIS (Torquay).

“ He challenged those who upheld vivisection to produce one single instance in which good had resulted. That such a practice should be tolerated in England was a perfect disgrace to us as a nation and as a Christian people.”—(Speech at Nottingham, November 28th, 1893, reported in the *Zoophilist*, December, 1893, p. 193.)

DR. STORRAR (Southport).

“ The very fact that pain was excited in an animal was sufficient in itself to vitiate any experiment, and when anæsthetics were used the result was the same. No experiments on an animal were valid for man ; the constitution, temperament, and development were not sufficiently analogous to make the experiment of any use. It was the same with drugs ; indeed the effect of drugs on men was quite different from what it was on animals, and such experiments were of no value to the profession.”—(From speech at Southport, December 6th, 1893, reported in the *Zoophilist*, January, 1894, page 231.)

DR. FRED A. A. SMITH.

“ . . . I not only look upon vivisection as morally wrong, but as practically useless.”—(See *Zoophilist*, December 1st, 1894.)

WM. F. CLARKE, M.D., B.Sc. London.

“ I have always thought this (vivisection) to be a prostitution of medicine. Physiological research is as distinct from the practice of medicine as is astronomy from navigation, and any attempt to combine the two will endanger our position in the eyes of the public.”—(Letter in the *Lancet*, November 26th, 1893.)

DR. ARTHUR ROBERTS, M.R.C.S.

“ I have been a Medical Officer of Health for over 16 years, and I am convinced that the only way to prevent infectious diseases—in fact, any disease—is to maintain the body in as good health as possible, and provide for the people pure air, pure water, good drainage, and wholesome food. And in cases of infectious diseases, perfect isolation of the sick patients, and plenty of soap and water. Cleanliness, scrupulous cleanliness, is the best preventive. Does it, then, require an institution, where poor dumb animals are to be tortured, to accomplish this ? Surely every one will answer ‘ No ! ’ emphatically ‘ No ! ’ Teach the people the simple laws of health, how to keep themselves clean, ventilate their houses, etc., and you will do more to prevent disease than all the vivisectionists’ experiments in the world. Leave the poor dumb animals alone, and educate the people. Let each one ask himself the question, ‘ Why this waste of money ? Why this torturing of poor dumb animals ? when the cure is open to every one.’ ”—(Extract from letter to *Leeds Mercury*, December 10th, 1893.)

## HARRY LUPTON, M.R.C.S.

"I have been a hospital surgeon for nearly twenty years, and I have never hesitated in case of necessity to use a knife on a human being—the same being duly anæsthetised—but heart and nerve would alike fail me if I were required to do a tedious operation on a conscious animal."—(Extract from a letter addressed to the Secretary of the Victoria Street Society for the Protection of Animals from Vivisection on December 8th, 1892, printed in the *Zoophilist*, January, 1893, p. 253.)

## ALEX. BOWIE, M.D., C.M., L.R.C.P.E.

"It is not logical to appeal to the horrors of war as a justification for the horrors of vivisection, nor is it good reasoning to argue that because we are entitled to *use* animals in our service therefore we are entitled to *abuse* our trust by the infliction of the most terrible pain."—(Letter in *Western Daily Press*, Bristol, November 27th, 1893.)

## DR. GORDON STABLES, C.M.

". . . I have never yet met a truly brave man who was not kind to God's lower creatures, nor do I believe that a man can be both cruel and brave; but the amount of cruelty that takes place in this country under the title of legalised experimentalism is horrible to contemplate. It is ten times worse on the Continent, especially in such institutes as those in Paris."—(Letter in *Daily Telegraph*, August 31st, 1892.)

## PROFESSOR SPOONER, R.V.C.

"Gentlemen, allow me to protest in your name and mine against all attempts to raise up schools of vivisection. The act is an abomination to all our most enlightened feelings—a torpor and darkness extinguishing our best sources of knowledge; in short, it is arrant and horrible Sepoyism wearing the mask of Art and Science. Public opinion only requires to be directed to the subject, to render such practices impossible, and justly to punish the perpetrators."—(*Veterinarian* for 1858, p. 614.)

## DR. A. DE NOË WALKER.

"It is impossible to argue the point of humanity with most professional vivisectioners. They appear to me to ignore everything; they see no kind of abuse, and very often no pain. This is the result of habit and *esprit de corps*, from which no one is exempt."—(Royal Commission, Q. 4,909.)

## DR. MORGAN DAVIES, M.R.C.S.

"I hold that we can well afford to dispense with vivisection. Not only could we dispense with it, but I firmly believe we should get on much more rapidly and securely without it."—(Letter to Miss Frances Power Cobbe, October 12th, 1892.)

## DR. WILLIAM BLACKWOOD.

"I deny that our present knowledge of nervous brain disease is due at all to the work of vivisectioners, and affirm that



vivisectors are less capable of managing such diseases than ordinary intelligent physicians. . . . The foundation for vivisection is wrong, the conclusions cannot be true.”—(Address at Philadelphia, U.S.A., 1885.)

H. R. HATHERLEY, M.R.C.S.

“I am not prepared to say that although we may utilise the animal kingdom for food, labour, and sport, it is unjustifiable to make the reasonable use of the same for scientific research, but there is a strong impression in the public mind that gross and unnecessary cruelties are perpetrated in the name of scientific research, and I, as a medical man, should like to see the grounds of suspicion removed. Experiments which will not bear the light of day ought not to be performed.”—(Letter in *Nottingham Daily Guardian*, August 2nd, 1892.)

PROF. DR. ROBERT KOCH (Berlin).

“As regards the effect of the remedy” (tuberculin) “on the human patient, it was clear from the beginning of the research that in one very important point the human being reacts to the remedy differently from the animal generally used in experiments—the guinea-pig—a new proof for the experimenter of the all-important law that experiment on animals is not conclusive for the human being, for the human patient proved extraordinarily more sensitive than the guinea-pig as regards the effect of the remedy. A healthy guinea-pig will bear two cubic centimètres, and even more, of the liquid injected subcutaneously without being sensibly affected. But in the case of a full-grown healthy man 0·25 cubic centimètre suffices to produce an intense effect. Calculated by body weight, the fifteen-hundredth part of the quantity, which has no appreciable effect on the guinea-pig, acts powerfully on the human being.”—(*British Medical Journal*, November 22nd, 1890, p. 1193).

DR. S. HAUGHTON.

“You cannot argue by analogy from one animal to another.”—(*Royal Commission*, 1875.)

DR. G. HERRING.

“Upon one condition only would I sanction any experiment upon a living animal, and that is, that the intending operator should first submit to the intended operation in his own person. We should then see who were the real philanthropists and who were the pretenders. I fancy there would be precious few of the former.”—(Letter in *Homœopathic World*, July 2nd, 1894.)

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# HYDROPHOBIA.

## THE TRUTH ABOUT M. PASTEUR'S PROPHYLACTIC.

BY

BENJAMIN BRYAN.

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FOURTH EDITION.

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Price Twopence.

1896.



# HYDROPHOBIA.

## THE TRUTH ABOUT M. PASTEUR'S PROPHYLACTIC.

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IN endeavouring to ascertain and set forth the truth about M. Pasteur's so-called Prophylactic against Hydrophobia, it is important to take his own statements as to his own case. If by pursuing this process the reader should find the result confusing, that will be the fault of M. Pasteur and of no one else.

### SPECIFIC MICROBE.

1881. M. Pasteur announced the discovery of a distinctive microbe in cases of hydrophobia.—(*Dr. Dulles.*)
1887. The English Commission reported that "M. Pasteur believes that the virus of rabies is a living micro-
1895. organism." (*Report*, p. 21.) [He has never demonstrated this as a fact.]

### EXPERIMENTS ON ANIMALS.

On August 11th of this year M. Pasteur announced,

1884. at the Medical Congress at Copenhagen, that he had discovered a method of rendering dogs "refractory" to rabies. "To attenuate the virus to the proper degree [for inoculation] it is necessary," he said, "to control our efforts by experiments." And again, "The experiments which we, my fellow-workers and I, have carried out have passed beyond the possibility of numbering them."—(*Medical Times*, August 23, 1884.)



## PROCESS OF OBTAINING AND ATTENUATING THE VIRUS.

M. Pasteur announced that the virus was strengthened  
 1884. by being transmitted through rabbits, and weakened  
 (or attenuated) by being passed from monkey to  
 monkey.—(*Address at Copenhagen, loc. cit.*) [Note that in each  
 of these numerous transmissions an animal was wilfully sacrificed  
 by being put through all the horrors of rabies, and ever since  
 the disease has had to be artificially propagated in the same  
 way in M. Pasteur's laboratory in order to keep up the supply of  
 "vaccine."]

At first it was in the brain that the virus was to be  
 1885-6. obtained in perfect purity; then trephining with  
 intradural inoculation was the sovereign method;  
 then intravenous inoculations were said to simplify the matter;  
 then blood was a good virus; then smaller quantities produced  
 fiercer rabies; then inoculations in series modified the virus  
 after many variations; then a few monkeys and rabbits  
 did the work; then rabbits alone sufficed, while the virus  
 was weakened by drying the cord. And, to crown all, forgetting  
 the traditions of his own work in regard to charbon and chicken  
 cholera, Pasteur said that the protective character of his virus  
 depended upon a reduction in quantity and not in the virulence of  
 the virus.—(*Dr. Dulles, Address to Philadelphia Medical Society,*  
*January, 1886.*)

[Note here that the monkeys were dispensed with—thus  
 proving from Pasteur's own practice the uselessness of the experi-  
 ments and cruelty inflicted on these animals up to this point—and  
 the attenuation of the virus, contained in the spinal cord of a  
 rabbit dead of rabies, was effected by suspending each cord in a  
 small flask in which the air was kept dry by a piece of caustic  
 soda.]—(*M. Pasteur's paper in "Bull. de l'Acad. de Méd.,"*  
*October 27, 1885, pp. 1431-39.*)

## INOCULATION OF HUMAN BEINGS.

In July of this year, M. Pasteur inoculated  
 1885. preventatively a boy, named Joseph Meister, with  
 the half of a Pravaz syringe of broth and rabbit's

spinal cord mixed together, the cord having been attenuated for fifteen days. [It is now alleged that the virus loses all its poisonous properties in fourteen days. *Report of English Commission.*] Meister was inoculated twelve times in ten days.—(*M. Pasteur's paper as above, p. 1436.*) “A full half of the spinal cords used in the crucial experiment on Joseph Meister . . . proved to have no virus when tested on rabbits.”—(*Dr. Dulles.*)

The evidence that the dog which bit Meister was mad was very slight, being confined to the fact that in its stomach were found bits of stick and straw. Meister lived, and his survival was treated as proof of the success of M. Pasteur's system.

Jacques Bonenfant, inoculated on the 30th August, 1885, died of hydrophobia on the 7th September following. Louise Pelletier, inoculated on the 3rd of October, died on the 4th of December, also of hydrophobia.

Up to the end of March of this year 161 persons treated 1889. in accordance with the method of M. Pasteur are known to have died of hydrophobia; and as to a man named Goffi, sent from the Brown Institution, London, it is admitted that he died of the inoculations. A similar result is suspected to have happened in other cases; in fact, Dr. Lutaud, Professor Peter, and the late Dr. Constantin James, of Paris, have all affirmed that M. Pasteur did not cure but communicated rabies.

To the end of this year the death-roll after 1896. Pasteur's treatment includes the names of 285 persons.

#### LOOSENESS OF DOSAGE.

It is well known that in dealing with poisons—and the word *virus* is but the Latin for “poison”—the medical profession take the greatest precautions to measure or weigh the dose they prescribe, and those who are familiar with homœopathic practice will be aware how small many competent medical men

who adopt that system of dosage say is the amount of a vegetable or mineral poison which will affect the health of a human being.

M. Pasteur, in his address at Copenhagen, took a very similar view of the poison of rabies. He said:—"Notwithstanding that the quantity of virus which will produce rabies, may be, so to say, infinitely small, it has been shown that, as a general rule, hydrophobia occurs in consequence of a bite, whereby the quantity of virus introduced into the system must generally be so small as to be almost indefinable."—(*Medical Times, loc. cit.*)

Notwithstanding this dictum, M. Pasteur, in the same address, described his proceedings in such loose, general terms as these:—

- (1.) "On May 10th, 1882, there were introduced into the popliteal vein of a dog ten drops of a fluid which had been obtained by macerating in *three or four times its weight* of sterilised broth, a *portion* of the bulb from a dog which had died of rabies."
- (2.) Again, "The bulb of a rabbit which had died of rabies after inoculation with a very virulent virus, was dissolved in *two or three times its bulk* of sterilised broth."
- (3.) And again, "Using two drops of the fluid obtained by macerating the bulb in *two or three times its bulk* of sterilised liquid."

M. Pasteur went on to say—we continue to quote from the Copenhagen address:—

"The only secrets in this method are to inoculate by trephining, and to use a quantity of virus which, although very weak, is more than sufficient to produce rabies in and by itself."

In coming to practise on the human being, however, he gave up trephining, and injected the virus into the skin of the right and left side of the abdomen alternately; and as to quantity, there was no attempt at measuring or weighing,



but, as in the case of Meister, mentioned above, the prepared liquid—a mixture of sterilised broth and rabid rabbits' spinal cord—was taken up by the “half syringe-ful” and injected at once.

#### VARIATIONS IN THE TREATMENT.

The number of inoculations and the mode of making them have been varied several times, a fact in itself an evidence that M. Pasteur's mind has never been clear as to the precise form his preventive treatment should take. Meister, as has been seen, received twelve injections in ten days, two on each of the first two days, and one on each of the others. But although that case is still vaunted as a successful one, the method adopted therein was almost immediately varied, and the second process was one inoculation daily for ten days. After an interval the intensive treatment, under which Goffi and many others died, was adopted. In this the process covered eleven days, three injections of virus being made on the first and second days, two on the third, fourth, fifth, eighth, and ninth, and one on each of the other days. According to the English Committee, “when it appeared possible that it might be dangerous,” this process was abandoned for a fourth, under which each patient was inoculated daily for fifteen days, twice on each of the first five, and once on each of the others. Besides these four changes of the whole formula, the strengths of the viruses also have been varied with regard to the days on which they were used, and it is clear that M. Pasteur's whole procedure has been based throughout on guesswork of the most pronounced kind.

#### EFFICACY OF CAUTERISATION.

M. Pasteur has borne witness to the efficacy of cauterisation for mad dog's bite in the following letter :—

“ Sir,—The cauterisations that you have practised ought to re-assure you fully as to the consequences of the bite. There needs no other treatment; it is useless.—L. PASTEUR.”

This letter was written in reply to the inquiries of a doctor in the environs of Paris in regard to another case, and its genuineness is vouched for by Dr. Lutaud, who quotes it in his book, "*M. Pasteur et la Rage*" (Paris, 1887, p. 23).

#### PASTEUR'S PROCESS AN EXPERIMENT.

From what has been said above it will be readily understood that M. Pasteur's process as applied to the human race has been but a stupendous experiment. On the morality of such experiments, M. Pasteur has himself pronounced the severest sentence possible. In his Copenhagen address he said :—

"THE EXPERIMENTS WHICH ARE ALLOWABLE ON ANIMALS ARE CRIMINAL WHEN WE HAVE TO DO WITH MAN."

#### MEDICAL OPINION.

As the minds of great numbers of people on such a subject as this, are governed by what medical men say about it, the following names of men, some of great eminence, who dissented alike from M. Pasteur's theory and practice, are given for their satisfaction :—

##### *France.*

Dr. A. Lutaud, Editor of the *Journal de Médecine de Paris*.\*

Professor Peter, M.D., Paris.

Dr. Germe, Arras.

Dr. Colin, Alfort.

Dr. Jules Guérin, Paris.

Dr. Constantin James, Paris.

##### *Austria.*

Professor Von Fritsch (at first a believer).

Dr. Lormser, Vienna.

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\* Associated with him are 48 other French medical men.

*Russia.*

Dr. Kessler, St. Petersburg.

M. Veniaminow, St. Petersburg.

Dr. Ewsensko, Moscow.

Professor Zienetz, Warsaw.

*Portugal.*

Dr. Abreu.

*America.*

Dr. Spitzka, New York.

Dr. Dulles, Philadelphia.

*England.*

Dr. C. Bell-Taylor, Nottingham.

Edward Berdoe, Esq., M.R.C.S., L.R.C.P., London.

Dr. J. H. Clarke, London.

Surgeon-General Gordon, London.

Dr. Edward Haughton, Norwood.

Dr. Gordon Stables, R.N., Twyford, Berks.

Surgeon-General Thornton, London.

#### EFFICACY OF THE SWEATING CURE OF DR. BUISSON.

Dr. Buisson, by the application of his system of hot baths, cured himself when the malady of hydrophobia had actually fastened upon him, and there is no record of any case in which the treatment under his care failed. Further, it is as harmless as it is efficacious, while that of M. Pasteur has been demonstrated to kill the patient, and surely a system under which TWO HUNDRED AND EIGHTY-FIVE PERSONS have died, no matter in what proportion to the total treated, cannot be worthy of public confidence.

#### EVIDENCE OF THE NUMBER OF ANIMALS TORTURED BY M. PASTEUR.

In January, 1887, the *St. James's Gazette* published a paragraph descriptive of M. Pasteur's kennels at St. Cloud, in which it was stated—

“ The surrounding country is made dismal by the howling of M. Pasteur's unhappy pensioners. A ghastly white wall has



been built round an acre or two of ground in the midst of which stands this veritable inferno of the canine race."

The only object M. Pasteur could have in keeping so many dogs, and incurring, of course, great expense, was to experiment on them.

When at Copenhagen in August, 1884, M. Pasteur said :—

"If you take any street dog you please and inoculate rabies by trephining, using as inoculating material a portion of the bulb of an animal which has died of rabies, you will invariably convey rabies. *The dogs to which the disease has been communicated in this manner are to be counted BY HUNDREDS. . . .* The same operation has been performed *on hundreds of guinea-pigs and on a yet greater number of rabbits.*"

The report of the English Committee issued in the middle of 1887 showed that then—three years later—the same process was still going on. Thus, it was stated that :—

"If a dog, or rabbit, or other animal be bitten by a rabid dog and die of rabies, a substance can be obtained from its spinal cord which, being inoculated into a healthy dog or other animal, will produce rabies similar to that which would have followed directly from the bite of a rabid animal, or differing only in that the period of incubation between the inoculation and the appearance of the characteristic symptoms of rabies may be altered.

"The rabies thus transmitted by inoculation may, by similar inoculations, be transmitted through a succession of rabbits with marked increase of intensity."

The transmission through rabbits must be constantly kept up, because the spinal cords of newly-dead rabbits are in daily and almost hourly requisition for the supply of "vaccine."

To maintain true rabies—from the dog—mad dogs must be continued in series in the same way. The system depends on this being done.



# Victoria Street and International Society for the Protection of Animals from Vivisection.

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# PASTEUR'S STATISTICS.

By ERNEST BELL.

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SEVERAL theories have been propounded at different times by Pasteur and others to account for the supposed effect of his anti-rabic inoculations, but so far without success.

Only a few weeks ago Dr. Ruffer, who as Secretary of the proposed "Institute for Preventive Medicine," must be assumed to have every cause to be a keen advocate of Pasteur's method, informed us (*British Medical Journal*, Oct. 14th, 1893) that "the cause of rabies has baffled even so great a genius as M. Pasteur," and that "all attempts at cultivating its causative agent have failed even when conducted by the best men under the best possible conditions."

From this it seems obvious that the Pasteurian treatment is not based on any scientific reasoning, but is purely empirical.

In spite of Pasteur's own assertion (Address at Copenhagen, August, 1884) that "the experiments which are allowable on animals are criminal when we have to do with man," we can only regard his treatment as a vast unjustifiable and cruel experiment not on animals only, but also on helpless and terrified human beings. Its claim to public approval rests not on scientific arguments but wholly on statistics; and those statistics, I shall presently show, have been kept in such a disorderly manner that they have no value at all. They illustrate only the fact that when the defence of vivisection is concerned no other consideration has any weight with a certain school, and that *then* literally, anything is "accurate enough for scientific purposes."

So much is this the case that while on the strength of

these statistics we have two opponents of the system—medical men, with special knowledge of the subject, saying, the one, that “Pasteur does not cure hydrophobia, he gives it;” the other that he regards this “so-called wonderful discovery as the most extraordinary delusion which has afflicted men of science for centuries;” we find on the other hand, two partisans of Pasteur, the one saying that Pasteur “saves fourteen out of fifteen persons doomed to die of the disease,” and the other telling us that Pasteur has saved “twelve thousand” lives.

The fact seems to be that the whole subject is still so much involved in obscurity that there are as yet no sufficient data on which statistics can reasonably be based.

Not only is the *cause* of rabies still unknown, but there is also no unanimity among experts even as to what are the essential *symptoms*. The symptoms of distemper have not unfrequently been taken for those of rabies, and while the presence of wood and other substances in the stomach of the dog has been accepted as sufficient evidence of madness by Pasteur and some of his adherents, competent authorities have only smiled at their inexperience and ignorance in making such an assumption.

Again there is no agreement yet among scientific men as to the number of persons who die after being bitten by rabid animals. The percentage varies between 5 and 15, according to taste and the theory to be supported, and the same authorities make different assumptions at different times.

Nor again is there any undisputed test by which to ascertain after death whether a dog has or has not been rabid. The Pasteurian test is to inoculate other animals with the spinal marrow of the dead animal. But we have the authority of the Veterinary Department of the Board of Agriculture, supported by experiments at the Brown Institution, for declining to accept this test. In the Report of the Board for 1889, p. 70, will be found a full account of the case of the 461 deer that died that year in Ickworth Park of a disease which Drs. Roy and Adami, both licensed vivisectioners, pronounced on the strength of the inoculation test to be rabies, but which the Veterinary Department, after their own experiments, which gave different results, registered in their Report as

“an affection, the true nature of which remains doubtful.” The method indeed of testing rabies by inoculation proves too much, for it points to the existence of such unparalleled numbers of rabid animals that common-sense rebels, and other experimenters have solved the difficulty by showing that inoculation in the same manner with other foreign substances produces similar symptoms.

The part played by terror which has been greatly augmented by Pasteur's investigations and all their accompanying horrors, and which admittedly can cause symptoms of hydrophobia, is also an unknown quantity, and has been left altogether out of count. Here is what M. Dujardin-Beaumetz (himself a vivisector), said on the subject in his Report presented to the Académie de Médecine in 1889, as summarized in the *Globe* :—

“It is *not* the number of mad dogs which has increased, but the *minds of people* which have become affected by the dread of this dire affliction, and which, becoming overwrought by the numerous (real or fictitious) accounts published on the subject, have engendered what is now termed ‘nervous hydrophobia’—neither more nor less than the absolute result of fear. This form of hydrophobia is infinitely more dangerous than the other; it is calculated to have resulted in the deaths of four-fifths of those persons said to have died of rabies,” etc.

By this account it appears that the deaths of *four out of five* of the recent victims of hydrophobia may be due directly to the originators and propagators of the scare which has been raised and fostered by the advocates of Pasteurism and vivisection.

Of the number of terrified creatures who have flocked to Paris, and who constitute the 12,000 lives “saved,” it is quite certain that a large proportion were never in any danger of contracting the disease. Mr. Horsley has told us that Pasteur deliberately inoculated persons to quiet their fears, who believed they had been bitten, but could give no satisfactory evidence of it, but Pasteur had no scruple apparently in allowing these cases to be included amongst the “saved.” Many cases it is known had never even been bitten by an animal at all, but some were only licked. To arrive at the truth about an alleged mad dog in one's own immediate neighbourhood is a matter of no little difficulty; how then, when patients are coming daily from distant countries is it at all possible to get trustworthy information about each and every dog



or wolf deemed to be mad by frightened and superstitious peasants?

Thus we see that :—

1. The cause of rabies is unknown.
2. The essential symptoms are not defined.
3. The percentage of deaths in cases without any treatment is uncertain.
4. There is no sure test by which to determine after death whether animals were or were not rabid.
5. The important element of Fear is indeterminable.
6. The individual cases are involved in obscurity.

And this is the foundation on which the statistics are based, which the vivisectioning school are not ashamed to put forth as “scientific.” They degrade the word when they use it!

In addition to these unavoidable causes of error grave and culpable carelessness has been shown in matters where errors might have been avoided. For instance, the method of inoculation has been several times altered and modified, because deaths occurred where, according to the theory, cures should have been effected, and yet the numbers treated under the discarded method have been carried forward to swell the total of so-called cures.

Josef Meister, Pasteur’s first case, on the strength of which he was held justified in continuing his experimentation, and many others, were in this way “saved” by a method which was afterwards discontinued because found inefficacious; and they still help to make the 12,000.

Again, we were at first told positively by Pasteur that his method would protect at any time before hydrophobia actually broke out; and at first all cases were reckoned as saved by the inoculations if they did not immediately die; until one day a patient did die, and then the excuse was that he had not come soon enough, and 36 days was said to be too long a time. This limit in due course broke down similarly by another inconvenient death, and a new limit, of 15 days, was invented; but still all the previous cases which had been “saved” under the false pretences were brought forward to make up the 12,000. As Dr. Dolan points out, Lord Doneraile, who put himself under treatment after a lapse of 11 days, was said to have come too late, but Madame Caressa, who subsequently was treated a year after being bitten, was claimed as a successful case.

It is inconceivable how men with any pretence to be scientific can allow themselves to be played with in this style by the Parisian chemist. The only explanation to be offered is that the credit of vivisection has been so closely connected with this system that they feel they *must* make it appear successful at all costs.

Again, in this wonderful hodge-podge of scientific credulity, inaccuracy, and misrepresentation, no attempt has ever been made to watch the fate of the inoculated persons after they have left Paris, and no one will ever know how many patients, nominally saved, have returned home to die. A typical case occurred of a boy at Huddersfield who died of hydrophobia five years after being bitten and inoculated, which shows that no one is safe, at any rate for that period. He, of course, had been doing duty for five years on the list as a successful case, and who can tell how many more have been falsely reckoned in the same manner.

Statistics manipulated in this manner are instructive only as showing the demoralisation which inevitably pursues those who embark upon an immoral course.

The only data we have which gave any semblance of reliability are those furnished by the report of our Hydrophobia Commission issued in July, 1887; but to the discredit of English science it must sorrowfully be admitted that they are no less inaccurate and misleading than the foreign manipulations.

The compiler of the report admits at once that an exact numerical estimate (of Pasteur's success) is not possible, for—

A. "The probability of hydrophobia occurring in persons bitten by dogs that were certainly rabid depends very much on the number and character of the bites—whether they are on the face or hands or other naked parts, or if they have been inflicted on parts covered with clothes their effect may depend on the texture of the clothes and the extent to which they are torn, and in all cases the amount of bleeding may affect the probability of absorption of virus."

B. The probability of infection from bites may be affected by speedy cauterising or excision of the wounded parts, or by various washings or other methods of treatment.

C. The bites of different species of animals, and even of different dogs, are probably for various reasons unequally dangerous.

He might also have added that the question whether

the dog has previously bitten other persons or things is a matter of importance.

Of the 90 cases selected for investigation by the English Committee, 66, or more than two-thirds, were from one cause or another thrown out, but of course we never found that they were removed from the total number of cures either by Pasteur or his English partisans. The remaining 24 cases were said to have been bitten by dogs "undoubtedly rabid," but the evidence upon which the opinion was based was not given, and we were in fact told that in one instance "the veterinary would not give a positive opinion;" and in another, the case of the child Tattersall, from Halifax, in which it is stated that the dog was "certified to be rabid by the veterinary surgeon," we know from other sources that the dog ran away after biting the child and was never examined by any veterinary surgeon at all.

The Committee said they "believed" that eight of these cases would have died, but as they give no reason for such a convenient belief, we can only conclude that the wish was father to the thought. As the cases were all subject to the influences mentioned above, which have a modifying effect on the virus, there would be nothing surprising in their all escaping the malady without the intervention of Pasteur's injections at all, and the Report proved nothing but the imaginative nature of the statistics on which the whole fabric has been based. Two sentences, however, in the Report deserve to be remembered:—

1st. "Deaths have occurred under conditions which have suggested that they were due to the inoculations rather than to the infection from the rabid animal."

2nd. To prevent hydrophobia "Police regulations would suffice if they could be rigidly enforced."

In Pasteur's last Annual Report, for the year 1892, he claims that four deaths only occurred amongst 1,790 patients treated.

Now, a list has been published elsewhere, giving particulars of 17 fatal cases during the same period, which probably represents a part only of those who have died and will die. How does Pasteur get rid of these? Some he quietly ignores; with others he employs an ingenious device; thus: If A. is inoculated in 1890 and dies, say in 1892, he is reckoned as a case cured in 1890, because he was inoculated in that year, and he is *not* reckoned as a



death in 1892, because his case belonged to 1890. We instance the cases of Beale, Hayden, and Lindley. It is pitiful to have to expose such devices in a man whom we would like to be able to honour for the good work he did before he adopted the vivisectional method. Pasteur does indeed admit to seven deaths during the year, but three he crosses off *because they died within a fortnight of the termination of the treatment*. This singular Protective Inoculation apparently needs a fortnight to incubate before it begins to protect!

Mark the result of this new limitation of Pasteur's. It is ingenious, and makes him quite safe for the future. It is well known that the result of a bite, if fatal, shows itself in most cases within four or five weeks. Now Pasteur's patients cannot generally get to him till several days after being bitten, his treatment takes about a fortnight more, and he cannot recognise their deaths if they occur within a fortnight of the end of the treatment. In this way he tides over the critical time, and renders himself safe during the most dangerous period. With a syringe filled with nothing stronger than clean water, and with the same limitations of time, it is difficult to see how anyone could help getting a similar percentage of "saved" lives. Also this fortnight allows time for the cases to be scattered over the world, and the subsequent deaths stand little chance of being chronicled, and if chronicled they are never noticed, *at any rate by M. Pasteur*.

The *Medical Press* (October 18th), in commenting on Pasteur's Report, pithily remarks that since the beginning of the treatment in 1886, "Pasteur has treated 12,782 cases, of which probably the 12,000 were imaginative."

Amid the mass of slipshod statistics which will be a permanent monument of the uncertainty of the vivisectional method and the inaccuracy of its advocates, three facts stand out undisputed and indisputable:—1. That while in France rabies thrives and mad dogs apparently abound, in Germany, the country which from the first has steadily set its face against Pasteur and his methods, the death-rate from hydrophobia is so small that the disease may be said to be hardly known in the country. 2. That in England the deaths from the disease in the five years before Pasteurism were 153, and in the five years after, when many patients were sent to Pasteur,

159. (*See Registrar-General 51st Report, Table XV.*)  
 3. That of Pasteur's patients who ought to have been saved if there had been any foundation for his theories, a list of 258 fatal cases has been compiled, several of whom have admittedly died—not from the bite, but from the so-called “protective” inoculations.

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# PASTEUR'S TREATMENT

FOR

## HYDROPHOBIA.

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## MEDICAL EVIDENCE.

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### IRISH OPINIONS.

Dr. DOLAN, of Halifax, Editor of the *Provincial Medical Journal*, says :—

“ Wherever a Pasteur Institute has sprung up, there the number bitten by *rabid* dogs has increased ; this is seen by reference to the figures published by M. Pasteur himself. We should look at the action of Germany and Belgium. The German Empire has been able to deal with the subject of hydrophobia, not by establishing Pasteur institutes, but by sanitary and prophylactic measures. The scientific attitude of the profession in Germany is significant. Germany is in the first rank of Science.

“ If we carefully examine the tabulated statement of deaths, we are forced to the conclusion that not only does M. Pasteur not protect from the disease, under the very conditions demanded by himself, but that he has added a new terror to it by the introduction of paralytic rabies. The paralytic form was almost unknown, now it is common.

“ The failure of the system is attested by the deaths.

“ Whole hecatombs of animals have been ruthlessly sacrificed in the quest after the virus (poison of hydrophobia), and well might (Dr.) Vincent Richards condemn the slaughter which has taken place without, as we assert, benefit to the human race, nay, even to its injury. A new terror is now added to the bite of the dog.”—(From “ Pasteur and Rabies,” by Thomas Dolan, M.D., F.R.C.S., Ed. London : George Bell & Sons.)

What Dr. MAGNER said :—

“ Dr. Magner (the only Medical Guardian on the Cork Board), said that as a member of the medical profession he should say himself that he had a very open mind in the matter,



and there was a very large body of medical opinion on the other side. He might say for himself that he had been seventeen years in practice and five years a resident medical officer of that Board, and during the five years he was there there were scores of cases of persons alleged to have been bitten by mad dogs, and during that time there was only one case of hydrophobia. Of course, statistics could frame anything, but the number of cases in which hydrophobia sets in after bites of dogs alleged to be rabid, are very rare—not more than two or three per cent. The establishment of a Pasteur Institute in this country was a question that should not be rushed; they should have the fullest information before they took any steps, as the expense would be found to be very great.”—*Cork Examiner* report, September 27th, 1895.

Dr. ED. HAUGHTON, B.A., Trin. Coll., Dublin, says:—

“Pasteurism begins with cruelty to the lower animals (of which he has destroyed such multitudes that he long ago called them ‘innumerable’) and ends by the cultivation of deadly viruses, capable of being used without detection by any scientific scoundrel who may desire to obtain them for such a purpose. There is one test of a statistical character which is not easily manipulated, and I commend it to the notice of the Cork Board of Guardians. Let them inquire at the Rue Dutot, Paris, or of any of the numerous institutes which have sprung up like so many mushrooms, whether, not the percentage, but the actual number of deaths from hydrophobia or any other inoculable disease, has notably diminished during a decade of Pasteurism; and whether we do not find an actually increased number of deaths from hydrophobia when the Pasteur treatment was in the very height of its fame? I say nothing about the use of anæsthetics in this letter, further than to declare that under their present pretended use the sufferings of the animals are terribly real and revolting, and the benefits conferred are of an extremely doubtful character.”—(From the *Cork Constitution*, Oct. 7th, 1895.)

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## AMERICAN OPINION.

Dr. CHARLES DULLES, of Philadelphia, says:—

“The number of cases of hydrophobia that occur in this country is happily small. It would doubtless be smaller still but for the exploitation of the Pasteur Institute, conducted by Gibier, in New York, and of its feeble imitator, conducted by Lagorio, in Chicago. These institutions and newspapers

that in times past have published sensational accounts of cases of so-called hydrophobia, have in a mild way reproduced some of the conditions which make France the hot-bed of hydrophobia, as well as hystero-epilepsy. But the psychological make-up of Americans is less favourable to the development of the germs of hydrophobia or those of hystero-epilepsy than that of the French, and consequently there is less of both here than there is in France.

“There the history of the last six years differs but little from that which I described to you in my last report. As then, so now, the number of deaths in France is greater than it was before Pasteur, just ten years ago (in May, 1884), boasted to a newspaper reporter. ‘Whoever gets bitten by a mad dog has only to submit to my three little inoculations, and he need not have the slightest fear of hydrophobia.’ The year before he made that boast there were four deaths from hydrophobia in Paris (the department of the Seine); the year after, when he had practised his preventive method for six months, the deaths from hydrophobia leaped at once from four to twenty-two. These oscillations indicate that Pasteur’s method is no more preventive of hydrophobia than is the method which he declared in 1884 would eradicate rabies in dogs. On the contrary, Pasteur’s method has undoubtedly increased the number of deaths from hydrophobia. I have indicated what has taken place in France, and can assure you that there has been no diminution in the number of deaths from hydrophobia in any part of the world since Pasteur’s infallible cures were inaugurated; and at the same time there has been added to these a larger number of deaths due to inoculation of the virus of what ought to be called ‘Pasteur’s disease.’”—(From a letter in the *New York Mail and Express*, June 25th, 1894.)

Dr. DRZEWIECKI :—

“From the time of the introduction of Pasteur’s method the mortality of hydrophobia has not only not lessened but increased in France. If the anti-rabic inoculations ever have any influence, it is only a removal of fear from the patients; but as we have no surety of their not being injurious, they should not be applied for this purpose.”—(From the *Medical Record*, of New York, quoted in the *Zoophilist*, London, February, 1891, p. 191.)

Dr. SPITZKA :—

“Unfortunately little hope can be held out that it (Pasteur’s remedy) will accomplish any good results.”



## FRENCH OPINIONS.

The late Dr. PETER (Professor of Pathology at the Faculty of Medicine, and Professor of Clinical Medicine at the Necker Hospital, Paris), who died in 1893, wrote thus to Dr. Dolan, shortly before his death :—

“I am entirely in agreement with you that M. Pasteur’s so-called preservative against hydrophobia is at once a mistake and a danger. . . . This treatment, altogether empirical, devoid of scientific basis. . . . contends vainly against disastrous facts which condemn it. . . . To magnify the advantages of his treatment, and to conceal his failures, M. Pasteur has every interest in exaggerating the annual mortality from hydrophobia in France, but this is not in the interest of truth . . . The mortality has been augmented since Pasteur began his work, and not only is the mortality increased, but cases of paralytic rabies have been induced by later inoculations. . . . Pasteur not only conveys rabies to man, but charbon to animals.” (The *Journal of Medicine*, Paris, stated in its obituary notice of Prof. Peter, that “France has just lost one of her greatest masters of clinical science.”)

Dr. A. LUTAUD, Editor-in-chief of the *Journal de Médecine de Paris*, says :—

“It is now certain that if M. Pasteur does not cure hydrophobia, he can give it. The great chemist has been creating a new variety of disease, which I have called *the experimental rabies*. In that horrible malady the pains are felt, not in the points bitten by the suspected animal, but in the points inoculated by the syringe of the experimenter; and the patients die, not as in cases of ordinary hydrophobia, but as tortured rabbits die under M. Pasteur’s hands.

“In France, in England, and in Spain, where M. Pasteur’s theories have been most warmly received, the increase of fear of death has been most marked. In Germany, where there is a sort of prejudice against all French ideas, the new teaching in regard to rabies has not taken root, and there has been a complete freedom from the panic and folly which were exhibited in the countries I have named; and hydrophobia is almost unknown in Germany.”

“I, therefore, now repeat, in concluding in all soberness, and with a full appreciation of the responsibility of such an assertion, that M. Pasteur’s method of treating hydrophobia appears to be *founded upon untrustworthy experiments and unsound reasoning*. And I now add to this my conviction that *its practical result has been an increase in fear and death*; and I think more strongly now than ever that this method



ought to be rejected and condemned in the interests of humanity and of science."

Dr. CONSTANTIN JAMES (a former pupil of Prof. Majendie):

"As for the inoculation, and especially the *intensive* inoculation, I confess it inspires me with a repugnance that nearly amounts to terror."—*Le Moniteur Universel*, Paris, Feb. 1887.

Dr. PIGEON, physician in charge of the factories at Fourchambault, says:—

"This (Pasteur's) mode of treatment is eminently likely to produce hydrophobia."—(From the *Zoophilist*, Jan., 1887.)

Drs. RASCOL and VERGNES state:—

"One Rascol, a rural postman, was bitten on the 28th of February, 1889. As Rascol wore two pairs of trousers the bites did not penetrate his clothes. . . . From the 9th to the 14th of March he was submitted to the inoculations (of Pasteur). On the 12th of April he developed grave symptoms, paralysis, pains at the points of inoculation, and not at the place of the bite (he had not been bitten); and on the 14th he succumbed to the *rage paralytique* that M. Pasteur had inoculated him with."—(From a letter in the *Journal de Médecine de Paris*, August 23rd, 1891.)

Dr. E. POTIN also recorded in the *Journal* of September 8th a fatal case "which occurred in my own private practice," and which Dr. Potin attributed to the Pasteurian treatment.

Dr. DILLER (*Medical News*, June 16th, 1894) gives statistics of seventy-eight cases of "hydrophobia" treated at the Pasteur Institute, and says many of them were "utterly incredible and wholly spurious." He deplores the popular agitation consequent on the establishment of "Pasteur Institutes," which he declares have undoubtedly led to the increase of hystero-epilepsy, a disease almost impossible to distinguish from hydrophobia.—(See *Medical Annual*, 1895, p. 320.)

M. COLIN, Professor at the French Veterinary School at Alfort:—

"You say there have been about 2,400 persons bitten; we will allow that, but that they were all bitten by mad dogs is more than improbable. The certificates produced by the patients are worth nothing; they were drawn up by incompetent people, and cannot be verified. The *post-mortem* examinations of the dogs are equally valueless; they afford no evidence of the madness of the dogs. The only way of arriving at a certain conclusion is by the prolonged observation of the animal, which should be shut up and kept till the characteristic symptoms declare themselves. It is therefore evident that a great number of the persons reputed to be under the influence

of hydrophobia were bitten by dogs that were never mad at all.”—(Speech before the French Academy of Medicine, Paris, November 9th, 1886.)

M. PASTEUR:—

“It is easy . . . to be deceived as to the value of any preventive remedy.”—(*The New Review* (London), Vol. I. p. 508. November 1889).

M. PASTEUR has borne witness to the efficacy of cauterisation for mad dog's bite in the following letter:—

“SIR,—The cauterisations that you have practised ought to re-assure you fully as to the consequences of the bite. There needs no other treatment; it is useless.—L. PASTEUR.”—(Quoted in “M. Pasteur and Hydrophobia,” by Dr. Lutaud, Paris, 1887, page 23.)

## ITALIAN OPINIONS.

Dr. ABATE, Naples, commenting on the death of a woman from hydrophobia, reported in the *Pangolo* (1887), writes:—

“As it is not certain that the dog was rabid, it is possible, and I believe probable, that the hydrophobia of which the woman died was not communicated to her by the dog, but by the inoculations of the Pasteur system, to which she was subjected at the Turin hospital. When will people persuade themselves that this pretended prophylactic is a mystification and an imposture?”—(From the *Zoophilist*, October, 1887, page 100.)

Dr. BORDONI-UFFRIDUZZI:—

In Italy “the conductors of an Anti-Rabies Institute have been denounced by high authority as guilty of sensationalism verging on quackery, and a distinguished *savant*, Dr. Bordoni-Uffriduzzi, in the *Riforma Medica*, January 19th, 1887, has felt himself compelled to warn his countrymen against its selfish and irresponsible management.—(From an article in *The Forum*, New York, 1887, by Dr. Ed. C. Spitzka, on the “Hydrophobia Bugbear.”)

## A PORTUGUESE VIEW.

“It was not long ago authoritatively announced in the *Diario de Noticias* that the Portuguese Government has, by Ministerial circular, forbidden civil authorities to continue sending persons supposed to be suffering from hydrophobia to M. Pasteur's laboratory.”—*British Medical Journal*, November 12th, 1887.

## AUSTRIAN OPINION.

PROFESSOR VON FRISCH (Vienna) experimented “with the virus of rabies supplied by M. Pasteur,” and found:—

“ . . . that Pasteur’s method of rendering animals refractory to rabies is not yet either sure or certain. There is not yet a sufficient scientific basis for the application in man of a preventive treatment after the bite of a rabid animal. It is, moreover, quite possible that the preventive treatment, at any rate the intensive method recently recommended by M. Pasteur, *may itself transmit the disease.*”—*Lancet*, Paris Correspondence, January 1st, 1887.

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## AN AUSTRALIAN OPINION.

DR. J. E. TAYLOR (pro-Pasteurian, Editor of *Science Gossip*) writes :—

“ Let it be understood that the Pasteurian treatment for hydrophobia is by no means an accepted fact among pathologists and physiologists.”—*The Zoophilist*, Nov. 1889, p. 50.

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## A RUSSIAN OPINION.

Dr. M. K. ZIENITZ (Professor and Fellow of the Imperial Faculty of Warsaw) :—

“ It is an indisputable truth, in pathology as well as in physiology, that it always remains to be demonstrated that the result obtained upon animals is equally true for mankind.” (He then gives instances in which diseases common to man and other animals cannot be communicated to monkeys or dogs.) “ Beyond the impossibility of taking the results of experiments on animals and applying them directly to man, it is necessary to remark that preventive inoculations are made on dogs in good health to preserve them against future infection ; while, on the contrary, men are generally inoculated who have been bitten, to preserve them against the virus which has already penetrated their system. It is evident, therefore, that in the two cases the inoculations are in principle essentially different, and it seems natural that no conclusion should be drawn in regard to mankind based upon experiments on animals.”—(From *A Critical Study of the Anti-Rabic Inoculations of Pasteur*, *Journal de Médecine de Paris*, September 2nd, 1894.)

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## ENGLISH & SCOTCH OPINIONS.

Sir B. W. RICHARDSON, M.D. :—

“ In these inoculations for the assumed cure of hydrophobia several hundred persons have had injected under their skin



and into their cellular tissue a portion of diseased spinal cord from the dead rabbit in a solution of what is called 'sterilised' broth. Some of these persons have been injected ten times or more, so that we must assume that between three and four thousand injections of dead animal matter have been made into the cellular tissue of living beings. Yet in no case has there been any report of abscess, of sympathetic irritation, or of fever. It could hardly be imagined that so many injections, even of distilled water, could have been made with so much impunity. The injected matter must be sterilised indeed, to reach such perfection of general and local inactivity."

Professor LAWSON TAIT :—

"So far these inoculation experiments have been devoid of any results save those so dangerous that on the ground of their risk alone I should hamper them by every kind of restriction."  
—Mr. Lawson Tait, in a letter to *The Times*, November 8th, 1892.

SURGEON-GENERAL CHARLES GORDON, C.B., late Principal Medical Officer, Madras Army, London :—

"We know now what has been the result of Pasteur's own inoculations. It has been not only *to increase the disease* of the various affections collected under the name of hydrophobia, but in Paris now the police are ordered to sacrifice the dogs."  
—(From a Speech at the Westminster Palace Hotel, London, July 22nd, 1892.)

Dr. CHAS. BELL TAYLOR, F.R.C.S.E., Nottingham, says :—

"Upwards of five years ago one of my grooms was bitten by a favourite terrier in the hand. The dog clung with such tenacity that it was lifted from the ground and had to be strangled off. I would not allow the animal to be killed, and kept it for six days, when it died with typical symptoms of furious rabies. Of course, every one was urgent to rush the man off to Pasteur, but I would not hear of it; I treated him myself, and he is well to-day. . . . We do not improve a man's chances who has unfortunately come in contact with disease, or who has contracted it, by giving him more of it; and it appears to me the height of unwisdom to suppose that we shall benefit a patient who fears that he may have been inoculated with rabid virus, by actually injecting rabid virus under his skin. . . . And yet, if M. Pasteur's injections are not sterilised down to the innocuity of rain water (which, I believe, is usually the case) this is precisely what he does."  
—(From letter in the *Daily News*, London, January 23rd, 1894.)

Dr. BERDOE says :—

“Here is a test I have demanded for several years and never been able to obtain: Tell us the name of the country in which the death-rate from hydrophobia has decreased since Pasteur’s inoculations were first introduced? Certainly it is not France! My firm conviction is that the prophylactic of Pasteur is utterly worthless, where it is not actually perilous, by frightening the patients who submit to it. Nobody can prove that it has ever saved a single life. I can prove it has destroyed several lives.”—(From “A Letter to the Irish Public,” Oct., 1895.)

Dr. JOHN H. CLARKE, London, says :—

“In France, the country most affected by Pasteur’s experiments, the mortality from hydrophobia has actually *increased* since he began to inoculate for it. This is easily accounted for. Professor Peter and Dr. Lutaud have shown that Pasteur has actually killed a number of his patients by a disease of his own invention—paralytic rabies. Professor Horsley has proved that the inoculations were fatal in one of the English cases; and I have ascertained that in another the symptoms with which the patient died were entirely unlike those of ordinary hydrophobia and corresponded accurately with those of the Pasteurian variety.”—(From a paper read at the Church Congress, Folkestone, October, 1892.)

Dr. HENRY R. HATHERLEY (who was once convinced of the value of M. Pasteur’s discovery), says :—

“It is very questionable whether all the people treated at the Pasteur Institute were bitten by dogs suffering from true rabies, and it is a consolation to know that people bitten by rabid dogs often escape hydrophobia. All the same, the result of M. Pasteur’s biological researches cannot be deemed encouraging. In seeking for a new remedy he has discovered a new disease, a new source of danger from dog bites—the *danger of being treated for an imaginary disease, and the substitution artificially of a real disease known as paralytic rabies.*”—(From letter in *Nottingham Daily Guardian*, October 14th, 1892.)

Dr. MARC ARMAND RUFFER (Pro-Pasteurian), London :—

“Preventive inoculations have no doubt been marvellously successful; but it is my firm conviction that the use of such methods is, and ought to be, strictly limited. Inoculation ought to be applied only when a given infectious disease cannot be eradicated without it. Why should there be an anti-rabic institute in this country, for instance, when hydro-

phobia could be stamped out for ever by one year's universal muzzling, and a system of guarantee for all imported dogs?"—*Nineteenth Century*, December, 1891.

MR. V. HORSLEY, M.B. :—

"The consideration of the whole subject has naturally raised the question whether rabies and hydrophobia can be prevented in this country. If the protection by inoculations should prove permanent, the disease might be suppressed by thus inoculating all dogs; but it is not probable that such inoculation would be voluntarily adopted by all owners of dogs, or could be enforced on them. Police regulations would suffice if they could be rigidly enforced."—(From the Report of the English Committee to inquire into M. Pasteur's Treatment of Hydrophobia. V. Horsley, Secretary, June, 1887).

GEORGE FRANCIS DOWDESWELL, M.A., F.C.S., F.R.S. :—

"Lastly [it was found] with respect to the methods of protection against infection by a series of inoculations with modified virus, as advocated by M. Pasteur, these are unsuccessful with the rabbit, and that his recent 'rapid' or 'intense' method of inoculation is liable itself to produce infection."—(From a paper read before the Royal Society, June 18, 1887.)

Dr. VINCENT RICHARDS :—

"I have now advanced quite sufficient, and in language not too strong, to show that M. Pasteur's method of treatment, so far as the world has been enlightened, rests on no firmer basis than that which justified the vaunted powers of Holloway's Pills and Mother Seigel's Soothing Syrup."—*Hydrophobia and Pasteur*, p. 20. (Calcutta: Thacker and Spink, 1886.)

Dr. F. S. ARNOLD, M.B., B.Ch. (Oxon), M.C.R.S., of Manchester, says :—

"We do not know how many patients out of every hundred bitten by rabid dogs develop hydrophobia, still less do we know how many of the patients treated at the Pasteur Institute had been bitten by rabid dogs at all, or were in the slightest degree in danger of dying from hydrophobia. In face of the overwhelming evidence of the recklessness with which all comers have been treated at the Pasteur Institute, however weak the evidence of rabies in the animal, only those determined to be convinced could base even the most modest statistical argument on such a very rickety foundation as Pasteur's figures. . . . The Pasteurians would thus have us believe that if M. Pasteur had not been at work in the Rue d'Ulm there would have been every year since 1885 a French



hydrophobia mortality more than double that occurring in the most fatal year from 1850 to 1885. I am surely not going too far when I say that such a conclusion is grossly at variance with all reasonable probability, and requires far better evidence, before it can be accepted for a moment, than the recklessly compiled figures of the Pasteur Institute.”—(From a paper read at the Church Congress, Folkestone, Oct., 1892).

Dr. VAWDREY wrote in December, 1884 :—

“Preventive inoculation has hitherto proved an utter failure ; and it is my conviction that Pasteur’s latest invention will meet with no better success than his former, and will, after a little time, occupy a place with Koch’s rod-like and comma-shaped bacilli in the limbo of forgotten obscurities.”

Dr. GORDON STABLES, R.N., says :—

“The Pasteur Institute in Paris does not seem to have proved such a success as its supporters and admirers would lead us to suppose. The reports that emanate\* from the Institution seem to be not always reliable, the proofs of the rabid condition of the offending dog or cat not being invariably positive. . . . It appears to be an undisputed fact that *many cases of hydrophobia have been caused by the Pasteur virus* ; this, I believe, Pasteur himself is not prepared to deny. Rabies in the dog or cat, and hydrophobia in the human being, are the rarest of all diseases—that is, real rabies or real hydrophobia, for the spurious or hysterical complaint, thanks to the panic-raisers, is only too common. . . . As regards panic, the very building of a Pasteur Institute in London would create one, and we should once more have spurious rabies and hysterical hydrophobia all over the country. I, for one, hope never to see such a blot on the face of fair England.”—From a letter in the *Daily Telegraph*, London, August 31st, 1892.

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\* MRS. CRAWFORD, the brilliant Irishwoman, who represents the London *Daily News and Truth* in Paris, wrote thus in the latter journal on October 3rd, 1895, page 808 :—

“Pasteur was always so anxious to know, when a dog-bitten person came for treatment, whether the dog had or had not been killed. He would not hear of its being kept under observation at a vet.’s. The band of American children who came for treatment when he practised at the Rue d’Ulm were all bitten by the same dog. Pasteur inoculated them according to his formula and sent them back cured to the United States. They were there handed over to a Barnum to be exhibited. When they ceased, through being stale, to attract, the dog that bit them was produced and taken about to be shown. He was in the best health and spirits, and a pile of affidavits established his identity. Pasteur was informed of this Americanism. He took it quietly. But ever after he showed anxiety to know, when a bitten person came, what had become of the dog. I fancy, though ‘cures’ are greatly multiplied, that mortality for rabies is not less than it formerly was.”

Dr. ARTHUR ROBERTS, D.P.H., Harrogate, says :—

“Surely we are not to have in England at the end of the nineteenth century, an institute whose object is to vivisection animals. After the thousands, I believe I might almost say millions, of animals destroyed by Pasteur, in the hope of finding a cure for hydrophobia, it is now admitted by many scientific medical men that his system is a failure. The newspaper reports of the recent death at Huddersfield of a young man who had been bitten some years ago, and was sent to Pasteur at Paris, point to the fact that his death was most probably due to the injections which he received in Paris and not to the bite of the dog. The report said that *the pains began in the places where the inoculation took place*. The fact is, this is only what is to be expected from Pasteur’s injections.”—(From a letter in the *Leeds Mercury*, December 10th, 1893.)

Dr. R. E. DUDGEON, London :—

“I find that of the cases inoculated at the Paris Institute, deaths from hydrophobia occurred in four who were inoculated on the day on which the bite was received; ten died who were inoculated the day after the bite was received; fifteen died who were inoculated two days after the bite. That looks as if the inoculations are powerless under the most favourable conditions.”—*The Zoophilist*, January 1890, p. 198.

The *Medical Press* (London) :—

“M. Pasteur’s Report for the past year (1892) states that in his laboratories 1,780 persons underwent treatment for rabies, real or supposed. Of these, nine out of ten came from France and Algeria, and only 26 came from Great Britain and Ireland. If from this 26 we deduct the cases in which the disease was only imagined by the persons bitten, we may reasonably assume that not more than, say, half a dozen genuine cases of rabies went from England to Pasteur, which confirms our repeated statement that hydrophobia is practically non-existent in Great Britain, and that all the hubbub about dog-muzzling is hysterical nonsense. Since the beginning of the treatment in 1886 Pasteur has treated 12,782 cases, of which probably the 12,000 were imaginative.”—October, 1893.

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# MYXŒDEMA

AND THE

## THYROID “CURE.”

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BY EDWARD BERDOE, M.R.C.S., L.R.C.P.ED.

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WHEN the apologists of Vivisection are challenged to prove that any disease to which the human body is subject has been definitely and effectually cured in consequence of knowledge gained by experiments on animals, they uniformly adduce the distressing and fatal malady termed myxœdema, which they declare is now curable in consequence of the experiments of Mr. VICTOR HORSLEY and others. Although we have frequently pointed out how misleading and deceptive this contention is, we propose to refresh the minds of our readers on a subject which is at once extremely interesting and instructive for the students of our side of the Vivisection question. Myxœdema is the name given by Dr. WILLIAM ORD to “a progressive disease, in which the tissues of the body are invaded by a jelly-like mucus—yielding dropsy, unaccompanied by albuminuria or other signs of primary affection of the kidneys.” If we turn to Dr. ORD’s article on the subject in “Quain’s Dictionary of Medicine,” first edition, published in 1883, we find that it was observed that a noteworthy phenomenon was met with in the external examination of the persons suffering from this disease—a diminution, sometimes almost a disappearance, of the organ known as the thyroid body or gland, which is a firm vascular substance situated on the sides and front of the upper part of the windpipe. It is remarkable that so short a time back as 1888 the great work on physiology by LANDOIS and STIRLING states that “the



functions of the thyroid gland are very obscure. Perhaps it may be an apparatus for regulating the blood-supply to the head." Sir CHARLES BELL supposed that it was designed to prevent the vibrations of sound originating in the larynx from being propagated downwards.

It is the seat of bronchocele or goitre, a disease which is sometimes, but not invariably, associated with idiocy and cretinism. Goitre, or enlargement of the thyroid gland, is common among populations whose food, air, water, or general surroundings are unsuitable or defective. Dr. CREIGHTON, writing in 1885, said that the thyroid gland enlarges because the organ having greater calls upon its ordinary function, makes an effort to meet the circumstances of the case. Apart from the deformity, goitre is harmless. In Switzerland, where the disease is common, surgeons have practised removal of the gland which had become enlarged under the belief that as it was an useless structure it could do no harm to take it away and thus possibly cure the patient. As the operations were performed in hospitals, the after effects of them were carefully observed. In eighteen cases of complete removal of the thyroid in the hospital at Berne, the condition known as myxœdema followed in sixteen instances. The dropsy of the skin, the progressive dulness, and other symptoms of impaired function soon became manifest, and death supervened in a few years. It was also remarked that in cases where myxœdema appeared without any operative interference, the thyroid gland was either very small or altogether absent. Here then the relation between myxœdema of an idiopathic character, and that following operative removal of a goitre was clearly manifest. To any one possessing an acute power of reasoning on pathology, it must have appeared certain that the so-called useless thyroid gland had not been placed in men or animals purposelessly. It should have been clear to the scientific observer that the gland fulfilled a highly important office in the nutrition of the body. Given bad hygienic conditions, the thyroid enlarges to compensate for them; remove the thyroid and the patient wastes away and ultimately dies. It must not be forgotten that Dr. KING, in 1836, had

made some researches, in which he discovered that the thyroid secretes a peculiar fluid which finds entrance to the general system through the lymphatics. Afterwards CREDE, RESAS, ALBERONI, and others, made further researches in the same direction.

Now we come to the so-called "discoveries" of Mr. HORSLEY. Text-books of physiology say that "HORSLEY finds that the removal [*i.e.* of the thyroid gland] is the essential cause of myxœdema and cretinism." HORSLEY forsooth, and not the surgeons at the Berne hospital who removed the goitres from their patients, and noted their subsequent illness and death. There was enough done at Berne hospital to save Mr. HORSLEY all his labour and his victims in his laboratory all their tortures. He took out the thyroid from a donkey, and the animal died in two hundred and five days in a miserable condition from emaciation and weakness; the animal was unable to stand, tremors and twitching supervened with paralysis, and the body temperature became markedly lowered. Sheep, pigs, and monkeys were also experimented upon in a similar manner. SCHIFF used fifty-two dogs for the same purpose, and many other cruel experiments were performed on animals merely to prove that the CREATOR had some reason for endowing animals with an organ which we possess in common with them. The Berne hospital operations had taught the surgeons that the organ could not be dispensed with. Where was the necessity for the animal experiments? Mr. HORSLEY no doubt did discover that he could cause myxœdema. What did he do towards curing it? Certainly, if one has learned that the removal of an organ has injured its possessor, it does not require any very great amount of genius to take the further steps of replacing it, and restoring, if possible, the lost function. And this is what was done. It is said, we know not with what precise amount of truth, that in a London laboratory certain animals from whom the thyroid had been removed, and who were in consequence wasting away, discovered and ate a quantity of thyroids just removed from another set of animals, and that they, in consequence, began immediately to recover.

Experiments were made by transplanting thyroids in different parts of the animals' bodies, and in many cases the most astonishing improvement in health took place. But it was not practicable to treat human patients in this manner, and it seemed that no cure would be found for myxœdema, until, at last, Dr. MURRAY, of Newcastle, by a happy inspiration, found that an injection of the extract of the thyroid gland of a sheep into myxœdemic patients would avert death and improve their health, but the treatment must be persisted in regularly or the patient relapsed. This, although a valuable remedy, is not quite the same thing as a "cure." The further step has now been taken of administering the extract in the form of tabloids by the mouth, and it is found equally efficacious as the injections. It will be seen that Vivisection has had little, if anything, to do with this beneficent discovery, which could have been made without any experiments on animals at all, had reasoning on the results of the Berne operations been allowed its legitimate exercise, but it is so much more "scientific" to mangle and mutilate animals in a laboratory than exercise the logical faculty at the bedside of the patients whom accident or disease has thrown in the way of the physician and surgeon. Recently Professor BAUMANN, of Fribourg, has succeeded in isolating the active principle of the thyroid gland of the sheep, which turns out to be simply iodine in an organic specific combination. Had chemical researches been originally made with a view to the discovery of this principle, the purpose of the thyroid gland might have been long ago discovered, and all the experiments on animals dispensed with. But Vivisection hinders rather than assists the advance of medicine.

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# “THE HOPE OF THE UNIVERSE.”

BY DR. GEORGE MACDONALD.

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DR. GEORGE MACDONALD, in the *Sunday Magazine* for the 29th of November, contributes a concluding paper under the above title, based on the text, “For the earnest expectation of the creature waiteth for the manifestation of the sons of God” (Romans viii., 19).

In the course of an argument on the redemption of the body, Mr. MacDonald deals with the question of an after existence for animals, and says that when the sons are free, when their bodies are redeemed, they will lift up with them the lower creation into their liberty. “St. Paul,” he remarks, “seems to believe that perfection in their kind awaits also the humbler inhabitants of our world, its advent to follow immediately on the manifestation of the sons of God: for our sakes and their own they have been made subject to vanity; for our sakes and their own they shall be restored and glorified, that is, raised higher with us. Has the question no interest for you? It would have much, had you now what you must one day have—a heart big enough to love any life God has thought fit to create. Had the Lord cared no more for what of His Father’s was lower than Himself, than you do for what of your Father’s is lower than you, you would not now be looking for any sort of redemption.” Mr. MacDonald concludes his argument on this point by asking whether the animals have not also a faithful Creator; shall not they also be lifted up? He must be a selfish man, indeed, he says, who does not desire that it should be so. “It appears that in the expectation of the apostle the new heavens and the new earth are to be inhabited by blessed animals also—inferior, but risen—and, I think, yet to rise in continuous development. When the apostle spoke of the whole creation, is it possible he should have dismissed the animals from his thoughts?” The writer continues:—

“If the Lord said very little about animals, could He have done more for them than tell men that His Father cared for them? He has thereby wakened, and is wakening, in the hearts of men a seed His Father planted. It grows but slowly, yet has already borne a little precious fruit. His loving friend, St. Francis, has helped Him, and many others have tried, and are now trying, to help Him; whoever sows the seed of that seed the Father planted is helping the Son. Our behaviour to the animals, our words concerning them, are seed, either good or bad, in the hearts of our children. No one can tell to what the animals might not grow, even

here on the old earth under the old heaven, if they were but dealt with according to their true position in regard to us. They are, in a sense very real and divine, our kindred. If I call them poor relations it is to suggest that poor relations are often ill-used."

Mr. MacDonald then comes to the question of torture by physiological experimentation, in regard to which he says he dare hardly trust himself to express his judgment of the conduct of the experimenters, those who say: "We are investigators; we are not doing it for our own sakes, but for the sake of others, our fellow-men." He reviews this contention as follows:—

"The higher your motive for it, the greater is the blame of your unrighteousness. Must we congratulate you on such a love for your fellows as inspires you to wrong the weaker than they, those who are without helper against you? Shall we count the man worthy who, for the sake of his friend, robbed another man too feeble to protect himself, and too poor to punish his assailant? For the sake of your children, would you waylay a beggar? No real good can grow in the soil of injustice.

"I cannot help suspecting, however, that the desire to know has a greater share in the enormity than the desire to help. Alas for the science that will sacrifice the law of righteousness but to behold a law of sequence! The tree of knowledge will never prove to man the tree of life. There is no law says, Thou shalt know; a thousand laws cry out, Thou shalt do right. These men are a law unto themselves—and what a law! It is the old story; the greed of knowing casts out righteousness, and mercy, and faith. Whatever believed benefit may or may not thus be wrought for higher creatures, the injustice to the lower is nowise affected. Justice has no respect of persons, but they are surely the weaker that stand more in need of justice!

"Labour is a law of the universe, and is not an evil. Death is a law of this world at least, and is not an evil. Torture is the law of no world but the hell of human invention. Labour and death are for the best good of those that labour and die; they are laws of life. Torture is doubtless over-ruled for the good of the tortured, but it will one day burn a very hell in the hearts of the torturers.

"Torture can be inflicted only by the superior. The divine idea of a superior is one who requires duty and protects, helps, delivers: our relation to the animals is that of their superiors in the family, who require labour, it may be, but are just, helpful, protective. Can they know anything of the Father who neither love nor rule their inferiors, but use them as a child his insensate toys, pulling them to pieces to know what is inside them? Such men, so-called men of science—let them have the dignity to the fulness of its worth—lust to know as if a man's life lay in knowing, as if it were a vile thing to be ignorant—so vile that, for the sake of his secret



hoard of facts, they do right in breaking with torture into the house of the innocent! Surely they shall not thus find the way of understanding! Surely there is a maniac thirst for knowledge, as a maniac thirst for wine or for blood! He who loves knowledge the most genuinely, will with the most patience wait for it until it can be had righteously.

"Need I argue the injustice? Can a sentient creature come forth without rights, without claim to well-being, or to consideration from the other creatures whom it finds, equally without action of their own, present in space? If one answer, 'For aught I know, it may be so,'—Where then are thy own rights? I ask. If another have none, thine must lie in thy superior power; and will there not one day come a stronger than thou? Mayst thou not one day be in a Naboth's place, with an Ahab getting up to go into thy vineyard to possess it? The rich man may come prowling after thy little ewe lamb, and what wilt thou have to say? He may be the stronger, and thou the weaker! That the rights of the animals are so much less than ours, does not surely argue them the less rights! They have little, and we have much; ought they therefore to have less and we more? Must we not rather be the more honourably anxious that they have their little to the full? Every gain of injustice is a loss to the world; for life consists neither in length of days nor in ease of body. Greed of life and wrong done to secure it will never work anything but direct loss. As to knowledge, let justice guide thy search and thou wilt know the sooner. Do the will of God, and thou shalt know God, and He will open thine eyes to look into the very heart of knowledge. Force thy violent way, and gain knowledge, to miss truth. Thou mayst wound the heart of God, but thou canst not rend it asunder to find the truth that sits there enthroned.

"What man would he be who accepted the offer to be healed and kept alive by means which necessitated the torture of certain animals? Would he feel himself a gentleman—walking the earth with the sense that his life and conscious well-being were informed and upheld by the agonies of other lives.

"'I hope, sir, your health is better than it has been?' 'Thank you, I am wonderfully restored—have entered in truth upon a fresh lease of life. My organism has been nourished with the agonies of several dogs, and the pangs of a multitude of rabbits and guinea-pigs, and I am aware of a marvellous change for the better. They gave me their lives and I gave them in return worse pains than mine. The bargain has proved a quite satisfactory one! True, their lives were theirs, not mine; but then their sufferings were theirs, not mine! They could not defend themselves; they had not a word to say, so reasonable was the exchange. Poor fools! they were neither so wise nor so strong, nor such lovers of comfort as I! If they could not take care of themselves, that was their look-out, not mine! Every animal for himself!



“‘To set the life of a dog against the life of a human being!’ No, but the torture of a dog against the prolonged life of a being capable of torturing him. Priceless gain, the lengthening of such a life, to the man and his friends and his country! That the animals do not suffer so much as we should under like inflictions, I hope true, and think true. But is toothache nothing, because there are yet worse pains for head and face?

“Not a few who now regard themselves as benefactors of mankind, will one day be looked upon with a disapprobation which no argument will now convince them they deserve. But yet another day is coming, when they will themselves right sorrowfully pour out disapprobation upon their own deeds; for they are not stones but men, and must repent. Let them, in the interests of humanity, give their own entrails to the knife, their own silver cord to be laid bare, their own golden bowl to be watched throbbing, and I will worship at their feet. But shall I admire their discoveries at the expense of the stranger—nay, no stranger—the poor brother within their gates?

“Your conscience does not trouble you? Take heed that the light that is in you be not darkness. Whatever judgment mean, will it suffice you in that hour to say, ‘My burning desire to know how life wrought in him drove me through the gates and bars of his living house?’ I doubt if you will add, in your heart any more than with your tongue, ‘and I did well.’

“To those who expect a world to come, I say then, Let us take heed how we carry ourselves to the creation which is to occupy with us the world to come. To those whose hearts are sore for that creation, I say, The Lord is mindful of his own, and will save both man and beast.”—(*Reprinted from the Zoophilist, February, 1893.*)

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# A FORETASTE OF THE INSTITUTE OF PREVENTIVE MEDICINE.

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FIFTH EDITION.

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IN the Supplement to the Nineteenth Annual Report of the Local Government Board for 1889-90, page 157, Dr. E. Klein, F.R.S., in his *Further Report on the Etiology of Diphtheria* (Appendix B) makes the following statements :—

“ In last year's Report I have shown that with diphtheria membrane, a definite infectious inflammation of the conjunctiva and cornea ” (of the eye) “ leading to corneal ulcer, can be produced in the cat by rubbing a particle of the diphtheritic membrane over the cornea and conjunctiva, from which the surface epithelium has been previously scraped off. . . . Before the end of the week the cornea shows distinct ulcer. The corneal tissue becomes at the same time loosened and opaque, the conjunctiva much inflamed, œdematous, and at the internal canthus there collects muco-purulent matter.” . . .

“ During the year just passed ” (presumably 1889) “ a number of additional experiments on the cat's cornea and conjunctiva have been instituted with cultivations of this diphtheria bacillus. . . . I subjoin a few instances of successful inoculation of cats.”

“ 1. With this cat's cornea bacillus . . . the scraped cornea of a fresh cat was inoculated.

“ 2. From a subculture . . . the scraped cornea was inoculated in two cats.

“ 3. From a culture, . . . the cornea and conjunctiva (previously scraped) of two cats were inoculated. In both these animals the disease set in with great intensity. . . . On the fourteenth day both eyes of this cat were closed, copious muco-purulent matter had collected. . . . This animal was killed on the seventeenth day ; the disease still progressing. The ulcer on the cornea reached down to the Descemet membrane (Figure 36 shows the condition of the cornea).

“ 4. From an Agar subculture, the corneæ of two other cats were inoculated. . . . One of these cats was killed on the fifteenth day. One cornea was opaque, the other showed a deep crater-like ulcer, with raised opaque margin ; conjunctiva much congested, swollen and coated with purulent matter. The other cat had considerable suppuration from the conjunctiva of both eyes.

“ 5. From a gelatine subculture, . . . the cornea of a cat was inoculated. On the fourth day there was a distinct ulcer on the cornea, with great congestion of the conjunctiva and muco-purulent discharge. The disease increased steadily

until towards the middle of the third week, when there occurred perforation of the cornea, and the formation of staphyloma (*see* Figure 37). The margin of the cornea had now become swollen and opaque, the conjunctiva bulbi, œdematous and deeply congested. The animal was killed about the end of the third week."

After this we hear of four other cats similarly diseased, the last being killed on the seventh day, with a "crater-like ulcer" on its eye.

After these 12 cats follow another series of experiments on cats by inoculating them with diseased matter in the groin. Two were "found dead" at the end of five days, two others after ten days, and the last two after eleven days. The *post mortem* showed "extensive hemorrhage in the subcutaneous and muscular tissues, with œdema in the groin, abdomen, and thigh; the tissues in many places discoloured, appearing as if split up by clefts into lamellæ, and almost gangrenous. The lungs and spleen were congested, the liver slightly congested, and both kidneys showed enlargement, and a remarkable change, which consisted in almost the entire cortex being grey and fattily degenerated."

Then follow the records of several more cats inoculated in the groin; and then we are told "An interesting result is obtained when cats are simultaneously inoculated superficially in the cornea, and subcutaneously in the groin." . . . The animals so treated when killed seven days and nineteen days afterwards, exhibited the usual symptoms.

Such are some of the most recent of Dr. Klein's researches. In a previous Report (namely, the *Sixteenth Annual Report, Local Government Board*), 1887, Dr. Klein describes a series of his experiments on fowls. Some were inoculated by injecting portions of the lungs of persons dead of consumption under their skins. Others were fed upon the same material. It is stated of one of these series of experiments that "one entire human lung full of tubercular matter was eaten by five fowls."

Do we ask who is this Dr. Klein whose Reports form a large part of that of the Local Government Board? The answer is not far to seek.

Emanuel Klein, M.D., F.R.S., is Professor at the Brown Institution. He held licenses for Vivisection in 1884-5-6-7-8-9 and 1890, and certificates dispensing with anæsthetics in 1884-5-6-7-8-9 and 1890. In 1887 he returned 46 pathological experiments, and in 1888, 48 of the same,—in 1889, 96—and in 1890, 82—all under the certificate dispensing with anæsthetics.

That this gentleman should have been given any post under Government, is surprising, and still more surprising that he should have been appointed, by the Senate of the University of London, to the Superintendence of the *Brown Animal*



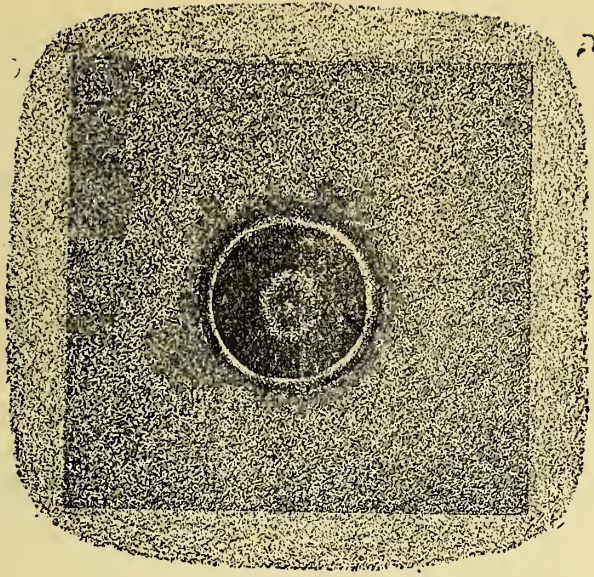


FIG. 35.

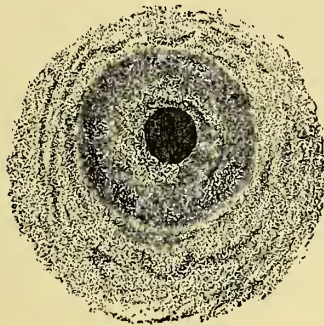


FIG. 36.

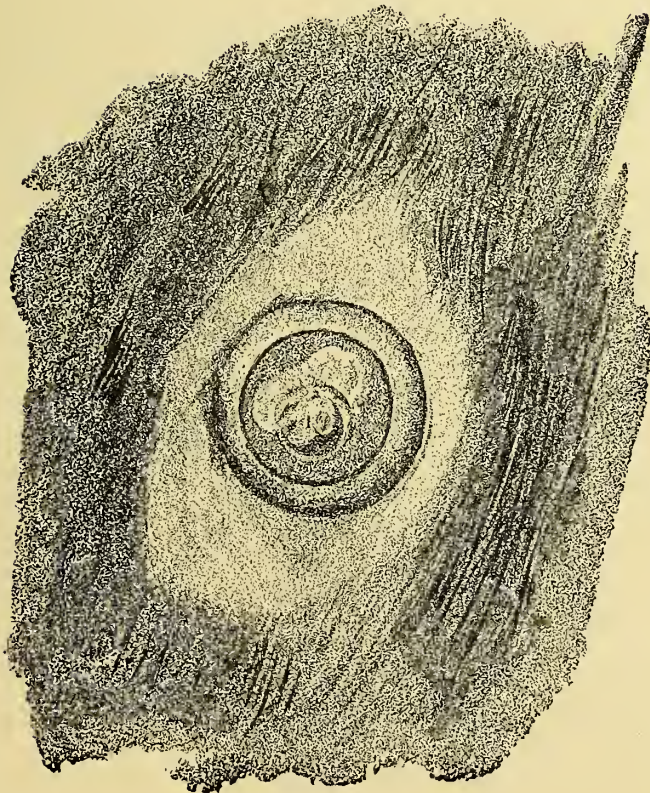


FIG. 37.

*Sanatory Institute*—of which the humane founder directed by his Will that “Kindness to animals committed to his (the Professor’s) charge shall be a general principle of the institution.”

Dr. Klein is the one physiologist in England who had the candour to tell the Royal Commission that he had “no regard at all to the sufferings of the animals” which he vivisected (Minutes 3540); and even to reiterate again and again (3542 *et seq*) that he “disregarded entirely the sufferings of the animals.” A man, he said, “who conducts an experiment has no time to think what the animal will feel or suffer” (3541). To give a gentleman, holding these views, a general commission to make investigations year after year on the lines of these pathological experiments, appears to be little less than bespeaking cruelty.

These experiments on the eyes of cats involve, then, the following circumstances:—

1. They were performed on the most highly sensitive and friendly domestic animals.
2. They were multiplied and repeated on a great many victims.
3. They were prolonged in many cases to a period of 17 days or three weeks of extreme suffering.
4. They were conducted by a vivisector who had publicly repudiated any pretence of regard for the sufferings of animals.
5. Finally, these doubly and trebly cruel experiments ARE PAID FOR BY THE NATION.\*

It is for the nation, therefore, to say whether anything like them shall be repeated at the public expense under a Government Board: or carried to a far greater extent in the *Institute of Preventive Medicine*, if it be licensed for Vivisection.

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\* Since the first edition of this paper was issued, the Home Secretary has stated in Parliament (July 9th), that “the experiments of Dr. Klein were not performed in this country but in South Hungary,” and he proceeded to remark—“he gathered that Dr. Klein did not hold the necessary certificate for making experiments in this country.” In a further discussion on the 20th July, Mr. Ritchie, President of the Local Government Board, said, “Dr. Klein is not a permanent salaried officer of the Local Government Board. He makes an Annual Report upon researches conducted by him on behalf of the Board. The remuneration which he received during the last financial year was £670.”—*Times*, 21st July.

Thus it appears that the nation has paid, through the Local Government Board, £670 for the performance of experiments some of which the law (as administered by the indulgent Mr. Matthews) had refused to authorize.

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# AN INSTITUTE OF PREVENTIVE MEDICINE AT WORK IN FRANCE.

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SIXTH EDITION.

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*Dr. FARQUHARSON, M.P., speaking in the House of Commons July 9th, said:—*

*“The Institute of Preventive Medicine was a private enterprise in which the operations of Pasteur were to be carried out in this country.”*

*“Times,” July 10th, 1891.*

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BEFORE the English public consents to the opening in London of an *Institute of Preventive Medicine*, wherein the work of Pasteur and Koch will avowedly be imitated and rivalled, and before the Home Secretary licenses the same for Vivisection, it is at least fair that the nature of that work should be plainly set forth. Possibly there may be a majority of the nation who after full explanation of the price in animal suffering which must be paid for such achievements of science, will still think the transaction justifiable. Possibly, on the other hand, the great mass of Englishmen and Englishwomen would stand aghast at the suggestion that they could be bribed by the most glittering scientific promises to sanction or participate in such deeds of cruelty. The fact that the advocates of vivisection, in all its forms, have persistently misrepresented and mendaciously minimized the sufferings involved in the practice, affords some presumption that in their opinion, at all events, the sentiment of the nation *if truly informed*, would be against them. They would scarcely have had recourse gratuitously to shameful prevarication,—such, for example, as describing the inoculations of animals with the most dreadful diseases as “involving no more pain than the prick

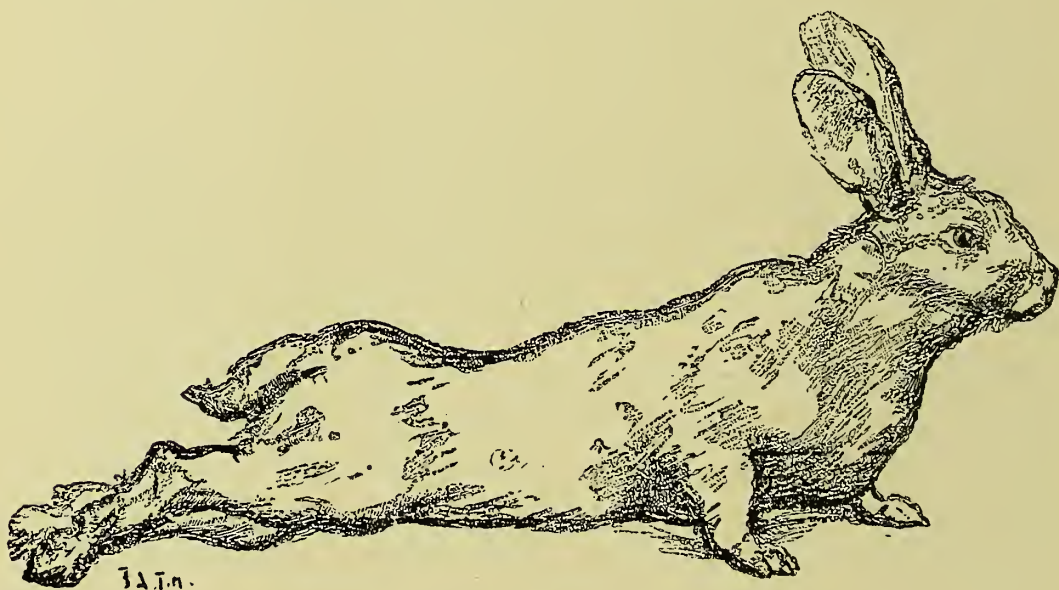


of a needle,"—had they felt confident that the truth would be received by their countrymen with complacency.

With the object of affording the required popular information respecting the work of an Institute of Preventive Medicine which it is expressly desired to imitate in London, a series of *verbatim* translations and quotations respecting the great Pasteur laboratory in Paris\* have been here collected.

THE following are translated extracts from an account of a visit paid to the laboratory of M. Pasteur, by M. Charles Mayet; published—with illustrations taken on the spot by M. Renouard—in the Paris journal *L'Illustration*.

"Rabies does not act on the Rabbit as on the Dog. He does not bite. He becomes paralytic some days after inoculation. . . . Raised on his forelegs as represented in one of our engravings, he



PARALYZED RABBIT.

can hardly advance, so complete is the paralysis of his hinder quarters. Then death comes. The eyes of the animal become glassy. He throws his head back and breathes yet for some hours in that position. Then he dies and is laid on his cage till he is taken to the laboratory, where his organs are studied. M. Pasteur has also Apes which bear on their foreheads, like the dogs and rabbits, marks of trepanning. . . .

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\* In another leaflet, *A Foretaste of an Institute of Preventive Medicine*, I have described what has been actually done at the cost of English ratepayers' money in this line of vivisectioning work; namely, the inoculation by Dr. Klein of morbid matter into the eyes of twelve cats, with the result of converting the eyes into ulcers. My authority is the Supplement to *Nineteenth Annual Report* (for 1889-90) of the Local Government Board, Appendix B.

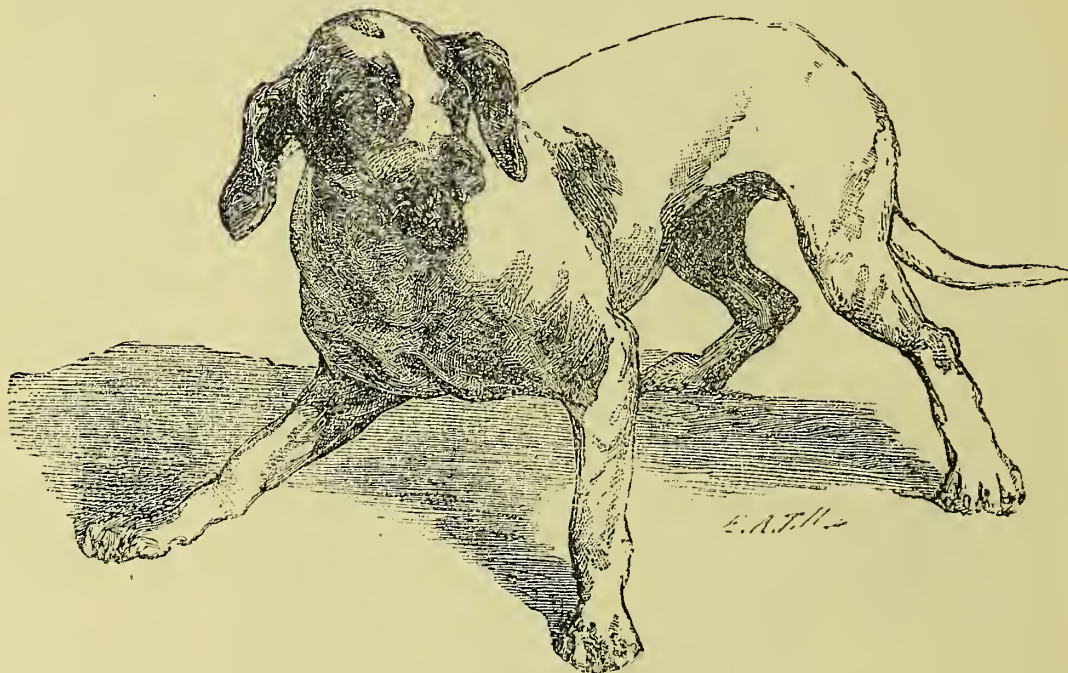


PREPARED FOR TREPPANNING.

“ Another part of the basement is occupied by the kennel. The inoculated dogs are shut in circular iron cages, provided with a solid network. M. Pasteur has arranged the doors so as to secure the safety of the attendants who bring the food. It is one of these



dogs, in the paroxysm of rabies which M. Pasteur showed us, observing '*He will die to-morrow.*' The animal looked at him, its body gathered up, the tail dropped, the mouth foaming, ready to



" WILL DIE TO-MORROW."

bite. M. Pasteur having kicked the wires of the cage, the animal dashed at him. It bit the bars, which became red with the bloody saliva. Then with its jaws bleeding, it turned, tearing the straw of its litter, back into its kennel which it had gnawed the preceding night. From time to time it uttered a piercing and plaintive cry.

"Beside the dogs which he keeps underground in the Rue d'Ulm, the illustrious *savant* possesses a kennel in the Rue Vauquelin, and another at Montmartre. It is by hundreds that must be reckoned the animals sacrificed in his researches."—*L'Illustration*, May 31st, 1884.

---

To understand the condition of the dogs which M. Pasteur has inoculated, it is desirable to recall the description given of the disease of natural Rabies by the humane and experienced veterinary surgeon, Mayhew.

"The entire glandular system seems to be in the highest degree inflamed. Beside this the brain, the organs of deglutition, digestion, and occasionally of respiration, are actually involved. *The entire animal is inflamed, . . .*" Most frequently the eyes,



which at first glow like live coals, turn green, ulcerate, and perish, the rabid dog before it dies becoming absolutely sightless.

The effect of the artificially induced rabies by M. Pasteur's process of trepanning and squirting virus into the brain, is to produce (if such a thing be possible), an aggravated form of the malady. An article in the *Fortnightly Review* describes it thus :—

“Pasteur holds that to have vaccines always ready to hand of the requisite degrees of activity, there must be a constant trepanning of the animals, whose living brains he wants for a virus-garden. The trepanned and inoculated rabbit soon gets numb and paralysed. The guinea-pig becomes exasperated by its torture, and wants to bite everyone and everything near it. In the case of the dog, mental anguish is the first symptom. The poor brute appears conscious that it must soon be dangerous, and as if wanting to beg pardon beforehand. Its efforts to propitiate indulgence for the state which it feels is coming on are heartrending to anyone who has any healthy sensibility. Veterinaries assure me that natural rabies, or rabies caused by bites, are mild compared to rabies induced through virus being let in on the brain; and I believe them, since I saw how quietly some of the wolf-bitten Russians died. The delirious period is fraught with mental and physical torture to the trepanned dog.”—*Fortnightly Review*, July, 1886.

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Here is another description by an eye witness of the same laboratory :—

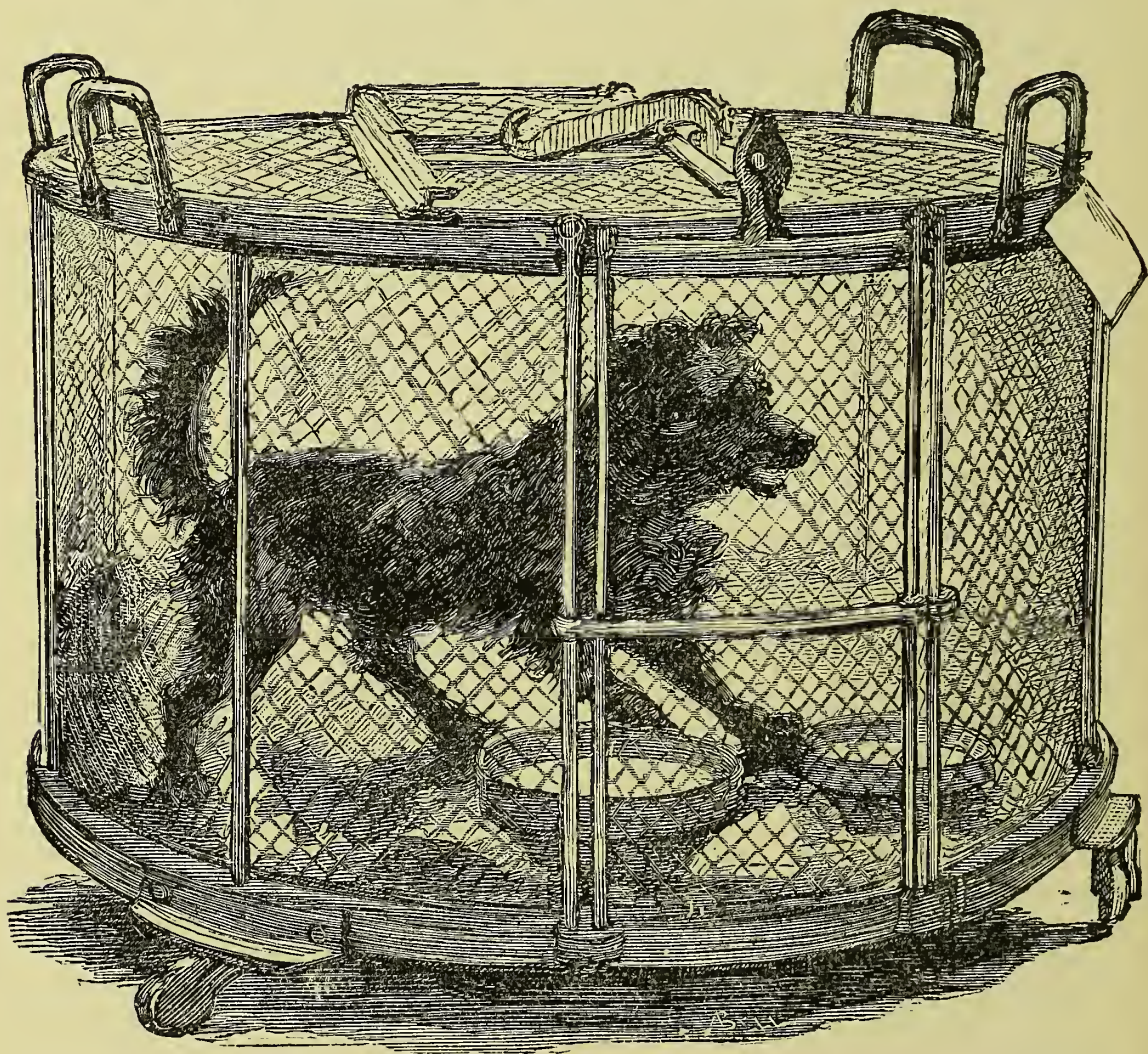
“M. Pasteur . . . . took us into the cellars of his laboratory. There, in circular cages of close trellis work, are imprisoned the dogs of different kinds. One of them has arrived at the last stage of rabies. He cannot bark in a natural manner, but emits hoarse and characteristic cries somewhat like the crowing of a cock. These peculiar cries frighten the occupants of the neighbouring cages, and they would certainly escape at full speed if M. Pasteur allowed the doors to be opened. If one kicks the door of a mad dog's cage, he rushes to the trellis work and gnaws it furiously. A thick bar of iron is held to him; he seizes it in his mouth, grinds his teeth upon it, and it is difficult to wrest it away from him; the same thing occurs when the end of the bar has been previously heated.”—*La Paix*, August 15th, 1882.

It will be observed that these remarks are made by a gentleman personally conducted by M. Pasteur himself round his cellars; and also that the hot irons presented to the rabid dogs have been, as the *Paix* expresses it, “*préalablement chauffés*”—(previously heated) in readiness for use in this manner—namely, to goad the suffering creatures to frenzy for the entertainment of visitors.



In the celebrated *Histoire d'un Savant par un Ignorant*, there occurs the following passage in a description of the *Savant's* laboratory in the *École Normale* :—

“Isolated in round and well-secured cages are the mad dogs; some of them are already at the stage of furious madness, biting the bars, devouring hay, and uttering those dismal howls which no one can forget who has once heard them. Other dogs are still in



DOG'S CAGE.

the incubatory period, and still caressing, with soft eyes imploring a kind look.”—Quoted in the *Figaro*, January 26th, 1884.

In January, 1887, the *St. James's Gazette* contained a paragraph describing Pasteur's kennels at St. Cloud in which it is stated that—

“The surrounding country is made dismal by the howling of Pasteur's unhappy pensioners. A ghastly white wall has been built round an acre or two of ground, in the midst of which stands this veritable *inferno* of the canine race.”



In October, 1889, *Murray's Magazine* contained an article by an ardent admirer of Pasteur, Mrs. Tweedie, who describes her visit to the laboratory, conducted by her brother, Dr. Vaughan Harley, a worker in the Institute. Here are abstracts from her ocular observations :—

“In the case of the kennels occupied by the rabid dogs, the walls are all ironwork, and the doors, of which there are always two, and sometimes three, draw up with pulleys from above in order to avoid any possible danger to human life. . . . Some dogs howl, others have a curious, sharp and incessant bark; most are dejected and sullen at first; and all were more or less violent in the later stages of the disease.”

---

In the *Daily Graphic*, September 2nd, 1890, the reporter, describing a visit to M. Pasteur's new laboratory, says that he was shown by the guide “quite a *nice assortment* of mad dogs.”

---

Dr. Armand Ruffer, Hon. Sec. of the *Institute of Preventive Medicine*, in a correspondence in the *Star* newspaper, August, 1891, and Drs. Hime and Roux at the Congress of Hygiene, attempted to throw doubts over the inoculation of dogs with rabid virus at the Pasteur Institute. In the face of the above reports of eye-witnesses (nearly all friendly to Pasteur), such denials can scarcely be received as signifying more than that the Pasteurian clique now find it expedient to keep the dogs used in their researches as much as possible out of the public gaze;—perhaps a sign that they are aware that the English nation is becoming exasperated by their cruelties.

This tone is a very different one from that adopted by Pasteur himself a few years ago. The following is a verbatim extract kindly taken for me in Copenhagen of the *Compte-Rendu* of the *Première Séance Générale* of the *Congrès International des Sciences Medicales*, 10 Août, 1884.

(Discours de M. Pasteur) :—

“C'est par centaines qu'on peut compter le nombre des chiens réunis en fourrière sans choix quelconque qui ont été inoculés de la rage par cette méthode (la trépanation). On a opéré de même sur des centaines de cochons d'Inde et sur un plus grand nombre encore de lapins. . . . Les expériences que nous avons déjà instituées, mes collaborateurs et moi, ne se comptent plus.”



The groundwork of truth in the denials of Drs. Ruffer, Hime, and Roux, may probably be the fact that the inoculation of patients at the Pasteur Institute has been for some time back performed with virus taken from an immensely extended series of maddened rabbits. That dogs are still used in large numbers for experiment in the Paris Institute, and *will be so used in that in London*, if ever it be licensed for vivisection, we have every reason to be assured.

Here is Dr. Elizabeth Blackwell's statement (in the *Globe*, August 22nd) in reference to her courageous interposition at the late Congress of Hygiene.

"In illustration of the sufferings of dogs when made mad, I referred to my visit to the rue Dutot on June 2nd, 1889, where, after inspecting the Hall of rabbits, guinea-pigs, and pigeons used in experiments for rabies, anthrax, &c., I went to the cages of three dogs also used for experiments in rabies, who were in various stages of madness, one dying after its ten days' agony; a second in the full fury of madness; a third in frantic terror clinging to the bars of his cage, imploring to be let out.

"Professor Roux's statement in opposition to my recommendation of the humaner methods of dealing with rabies, seemed to infer that dogs were not rendered mad in a Pasteur Institute, or in dealing with rabies. But when I stated to the Professor that I had myself seen this series of three dogs being made mad, he replied:—'Oh, you might have seen a great many more, but they are not to inoculate people.'

"Now it is well known from experience that it is too dangerous to inoculate direct from the dog to the human being. But the fact that dogs are constantly made mad for experiment in the Pasteur Institute or in any institute that adopts Pasteurian methods, should be honestly acknowledged, not evaded."

---

In 1886, M. Pasteur wrote a letter to Mr. Bygott as follows:—

"You ask me, besides, my opinion on vivisection. Such a subject ought not to be discussed. I condemn barbarity in vivisection as strongly as the most tender-hearted woman. But who is the scientific man, worthy of the name, who can be accused of practising such barbarity? As to compassionating the death of a few rabbits when the end is to save the life of a man, and as to being sentimental over the sacrifice of a few sheep and oxen to save sheep and oxen by hundreds of thousands—they are only fools who would reason in this manner."—*Manchester Guardian*, December 14th, 1886.

In view of this candid description of his labours as amounting to THE DEATH OF A FEW RABBITS (!), and of various recent efforts to put prominently forward the comparatively easy death of the inoculated rabbits as a satisfaction to the humane public, while preserving

silence respecting the agonies of the dogs—enquiries have been instituted to learn whether it were true that Mr. Pasteur had now, at last, after his “innumerable” trepannings and injections of virus into dogs, ceased to experiment on those most sensitive and intelligent creatures? Dr. Lutaud, Editor of the Paris *Journal de Médecine*, replied to the question as follows:—

“St. Raphael, Var.,

“September 15th, 1890.

“M. Pasteur is, and has always been, using a great quantity of dogs for his experiments.

“It would be more than a mistake to affirm that M. Pasteur is only using rabbits for the experiments connected with hydrophobia. Rabbits are used only to furnish the virus, but all the experiments are made upon dogs.

“M. Pasteur intends to prove that dogs inoculated are refractory to hydrophobia; then he inoculates dogs which are bitten by mad animals or inoculated with poisonous virus. A large quantity of those dogs are dying from the experiments. I will send more particulars when back in Paris, but I can positively affirm that an immense quantity of dogs are killed at M. Pasteur’s laboratory for experiments and for teaching. . . .  
A. LUTAUD.”

The following is the most recent description of the Pasteur Institute, 45, rue Dutot, Paris, which has come to our hands. It is from the Report of Mr. Arthur Westcott, Lecturer to the Victoria Street Society, to the Editor of *THE ZOOPHILIST*, dated London, 21st June, 1893, and is countersigned by the two gentlemen who accompanied Mr. Westcott, namely, Mr. Philip G. Peabody, Attorney and Councillor-at-Law, 18, Richfield Street, Boston, son of the well-known and much-respected Judge Peabody, of New York, and George Baudry, Esq., M.D. :—

“I arrived in Paris on Monday, the 12th June, 1893. That day I had an opportunity of going over the Pasteur Institute. Thanks to a medical friend, Dr. George Baudry, we were very graciously received, and the attendant, who was instructed to show us over, was particularly polite and communicative. We were shown all over the place, including the laboratories. We then went all through the houses in which the animals are kept. In one room in these houses we counted over 500 animals, chiefly rabbits and guinea-pigs. Every animal in this house has been inoculated with some disease, chiefly rabies and tuberculosis. Scores of rabbits had been inoculated in one or both eyes, the eyes were sloughing, and the poor creatures were very uneasy, although these experiments, as we are always assured, ‘cause no more pain than the prick of a needle.’ Many rabbits were paralysed in their hind quarters, and it was painful to watch their efforts to move; some were evidently



too weak to do so. Many were lying on their backs panting, and death had relieved many. We saw several dogs which had been inoculated with rabies, one of which, a poor little brown spaniel, was in the last stage of the disease. We also saw several horses and cows which we were informed had likewise been inoculated. Cats, also, we were told, had been inoculated and were allowed to go at large.

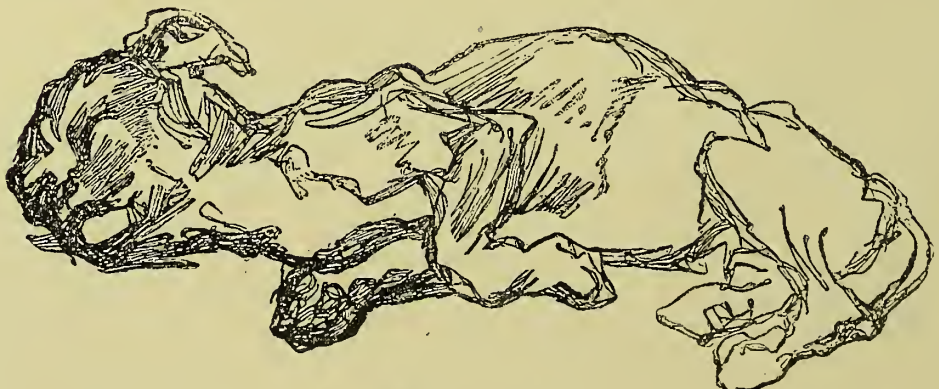
"In one corner of the grounds we found a large heap of rubbish consisting chiefly of broken culture-glasses, and tubes and wads of cotton wool used for stoppers, these wads were saturated with cultures and different viruses. One of the culture tubes I examined had contained, and even then contained, according to the label, a culture of the Anthrax bacilli. This rubbish heap was in the very hottest corner of the garden, and of course was covered with a great swarm of flies. It seems strange that the very men who are constantly frightening people with sensational stories about flies carrying cholera and anthrax on their feet and wings, should take no precautions to prevent them from doing so. They certainly give them every opportunity of carrying such diseases by throwing these cultures on rubbish heaps."

The foregoing extracts have been compiled to aid the English public to understand what will be the work of the new *Institute of Preventive Medicine*, unless the Home Secretary refuse to grant it a License for Vivisection.

If we do not desire to see such spectacles repeated in our country, we shall send in such a Memorial to the Home Office, and raise such a storm of righteous indignation, in and out of Parliament, as shall sweep the atmosphere of England clear of such schemes for all future generations.

FRANCES POWER COBBE.

September 1, 1891.



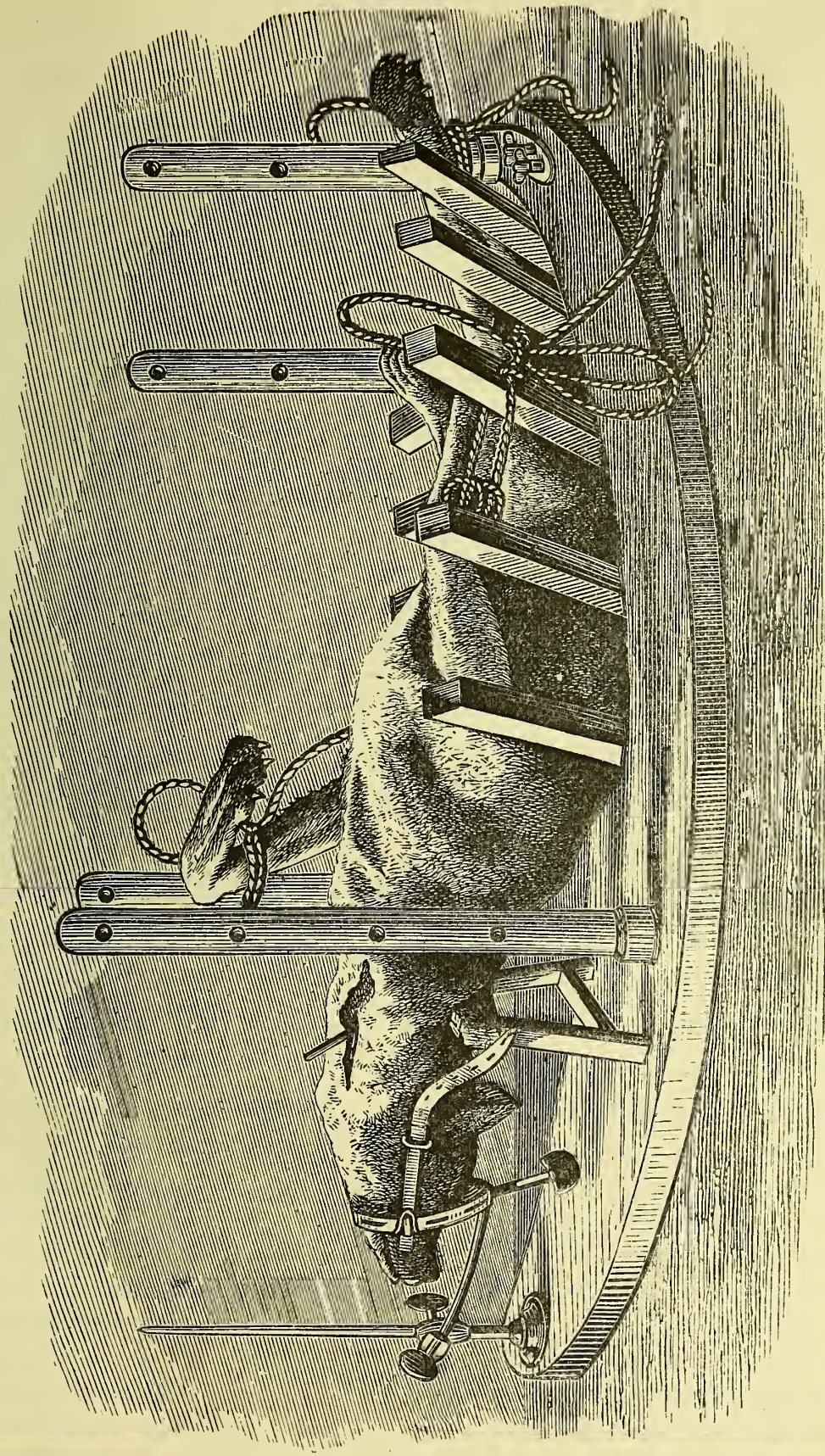
AT REST AT LAST.

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# A DOG BEING DISSECTED ALIVE!



"Large dog on which various experiments have been made over night. It seems no worse"!  
*La Pression Barométrique*, p. 637.



## A DOG BEING DISSECTED ALIVE !

---

It is the habit of the Vivisecting School of Physiologists to assert that the statements put forward by the Anti-Vivisectionists are exaggerations. The best proof of the fallacy of such an allegation is to be found in the descriptions of their experiments contained in the standard works of the physiologists themselves and in the illustrations accompanying them.

The woodcut on the other side is a photographed copy of one of these latter, taken from M. Paul Bert's work "*La Pression Barométrique*," Paris, 1878 (London: Baillière, Tindall and Co., King William Street, W.).

In proof that similar experiments are being made in England and Scotland, see the Minutes of Evidence taken before the Royal Commission, 1876.

The following list of Vivisectional horrors is collated from a work compiled by Mr. Colam, Secretary to the R.S.P.C.A., entitled "*Vivisection: the Royal Society for the Prevention of Cruelty to Animals, and the Royal Commission*" (London: Smith, Elder & Co., Waterloo Place, 1876):—

Making artificial fistulas and tubercles in the stomachs and lungs of dogs; giving dogs emetics, and then tying up their throats to render vomiting impossible; inflaming the spinal cord of an animal by passing a thread through it, dividing nerves of the most sensitive character; injecting various burning acids, acrid fluids, and virulent poisons into the veins of animals; cutting out part of a creature's liver or brains, or tying up its gall duct; passing electric shocks through the exposed brain, or across the eye, &c., scraping away the cornea of the eyes of frogs, and then burning them with nitrate of silver or acids; tying up the arteries of animals; tying up their intestines; dissecting the nerves of the spinal cord; inserting the limb of one animal into the body of another, or into its stomach, to be eaten off by the gastric juice; exciting the most violent agonies in animals by injecting various kinds of chemical or foreign substance,

however deadly or caustic, into the jugular or other veins of animals ; pinning them down on boards, or holding them in the gripe of iron machines, while the vivisector lays bare the heart, the liver, the brains, or other interior vitals ; again setting them free, and leaving them in such mangled condition for days and weeks ; piercing a spot on the brain to see a rabbit spring from a table in a violent spasm of agony ; opening the chest and drawing up the heart ; irritating internal wounds with cantharides ; cutting away parts of the liver of dogs and cats with a galvano-caustic knife ; opening the stomach of a dog and pouring into it a mass of liquid Prussian blue—into the stomach of another dog half-a-pint of boiling water.

Mr. Colam expressly states :—

“The extracts are made from English books, and, where the experiment was performed abroad, it will be found that an English sanction has been given to it.”—*Preface to Documentary Evidence*.

It may be added to the above that Dr. Rutherford's and Dr. Roy's excruciating experiments on dogs (performed not only without anæsthetics, but under the influence of the hyperæsthetic curare), have been carried on since the passing of the present Vivisection Act (39 and 40 Vict., c. 77), and under its express provisions, by licence under the hand of the Home Secretary, with special supplementary certificates permitting unrestricted torture.

Well might Sir William Fergusson (late Sergeant Surgeon to the Queen) reply to the question put to him by the Royal Commission—“You think that if the public really knew what was going on in this country at this time they would expect an interference on the part of the Crown and Parliament?”—

“I do think so, just as much as with reference to the disinterring of dead bodies years ago.”—*Evidence Roy. Com., Q. 1040*.

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COMMENTARY  
ON THE  
CRUELTY TO ANIMALS ACT, 1876.

BY THE  
HON. BERNARD COLERIDGE  
(NOW LORD COLERIDGE, Q.C.),  
*Of the Middle Temple, Barrister-at-Law.*

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# COMMENTARY ON THE CRUELTY TO ANIMALS ACT, 1876.

BY THE HON. BERNARD COLERIDGE.

OF THE MIDDLE TEMPLE, BARRISTER-AT-LAW.

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Vivisection is a practice about which men naturally differ, differ in earnest, and bitterly. On the one side are they who condemn the practice on two grounds. They deny that it is profitable, or that it leads to the saving or prolonging of life, or alleviating suffering; and they say further, that, even if it be shown to be occasionally thus profitable, it is so cruel, that its occasional utility does not justify its use.

On the other side are they who say that the study of physiology by means of vivisection leads to the obtaining of knowledge; that the end, the increase of knowledge, is a sufficient justification for the means, vivisection, by which the end is reached; and, further, that knowledge, thus obtained, can often be practically applied to prolonging life, and alleviating suffering.

And when the opposers of vivisection urge that at any rate the animal operated on should be prevented from feeling pain by the administration of an anæsthetic, and should be killed before the effect of the anæsthetic has passed away, the defenders answer that the administering of anæsthetics is a difficult and precarious operation often ending in the premature death of the animal, that in many cases by altering its physical condition the anæsthetics frustrate the object of the experiment, and also that, where the observation of the after effect of the vivisection is desired, the killing of the animal before it wakes from the influence of the anæsthetic, prevents that observation.

With some modifications, of course, this is, I think, a fair summary of the views held by the two parties. The great bulk of the medical profession, and a large body of scientific professors are, with some noteworthy exceptions, among those who approve of vivisection. And it is to these approvers of vivisection that its practice is, by the Cruelty to Animals Act of 1876, in fact entrusted.

This Act, which is something of a compromise upon the face of it, was passed to appease the growing feeling against the infliction of pain in this form. Limit the practice, in some sort, no doubt it does. Prior to the Act anybody could vivisect any animal, other than a domestic animal, with or without anæsthetics, where, when, and how he pleased. This unlimited vivisection is now illegal.

Now by section 2 :—

- “ A person shall not perform on a living animal any experiment calculated to give pain, except subject to the restrictions imposed by this Act.”

If he does so he renders himself liable to a penalty not exceeding fifty pounds for the first offence, and for the second offence to a penalty not exceeding one hundred pounds, or to imprisonment for a period not exceeding three months at the discretion of the Court.

And these restrictions are imposed by section 3 :—

- “ (1.) The experiment must be performed with a view to the advancement by new discovery of physiological knowledge or of knowledge which will be useful for saving or prolonging life or alleviating suffering ; and
- “ (2.) The experiment must be performed by a person holding such license from one of Her Majesty’s Principal Secretaries of State, in this Act referred to as the Secretary of State, as is in this Act mentioned, and in the case of a person holding such conditional license as is hereinafter mentioned, or of experiments performed for the purpose of instruction, in a registered place ; and
- “ (3.) The animal must, during the whole of the experiment, be under the influence of some anæsthetic of sufficient power to prevent the animal feeling pain ; and
- “ (4.) The animal must, if the pain is likely to continue after the effect of the anæsthetic has ceased, or if any serious injury has been inflicted on the animal, be killed before it recovers from the influence of the anæsthetic which has been administered ; and
- “ (5.) The experiment shall not be performed as an illustration of lectures in medical schools, hospitals, colleges, or elsewhere ; and
- “ (6.) The experiment shall not be performed for the purpose of attaining manual skill.”

If these restrictions had gone further, and prohibited all vivisection save in a registered place, and in the presence of an inspector whose duty it should be to see that the restrictions were duly complied with, the Act would then indeed have limited, as it professes to limit, the infliction of pain upon animals. Perhaps it might not have put an absolute stop to cruel operations performed in private.

Private and illegal practices can, if undetected, go unpunished. But there is always the possibility of detection, and men of the class of learned professors do not readily commit acts which are illegal, and for which punishment is inflicted. Moreover they would not dare in such cases publish the accounts of their investigations, and such publication affords certainly a main reason, if not the only reason, why they vivisect.

But the Act does not complete these restrictions by such an addition as I have suggested, nor does it leave them where they stand. It immediately overrides them by a series of provisoes which deliver over the animals to the will and pleasure of the holders of licenses and certificates, which can be obtained from the Secretary of State, subject to his discretionary refusal, signed by those who may be, and probably are, vivisectors themselves.

We will first see what these holders of licenses and certificates can do, and then see how these licenses and certificates can be obtained.

By section 8 :—

“The Secretary of State may license any person whom he  
 “may think qualified to hold a license to perform  
 “experiments under this Act. A license granted by  
 “him may be for such time as he may think fit, and  
 “may be revoked by him on his being satisfied that  
 “such license ought to be revoked. There may be  
 “annexed to such license any conditions which the  
 “Secretary of State may think expedient for the  
 “purpose of better carrying into effect the objects of this  
 “Act, but not inconsistent with the provisions thereof.”

And by section 9 :—

The Secretary of State may direct any persons per-  
 “forming experiments under this Act from time to  
 “time to make such reports to him of the result of  
 “such experiments in such form and in such details as  
 “he may require.”

The Secretary of State may annex conditions, and require reports—but he may not. Whether he does so or not is purely discretionary.

The license is granted on an application, signed by certain persons. These applications I shall deal with when I come to section 11.

The simple license holder who has no certificate is bound by the restrictions. But there is no machinery provided by the Act to guarantee their observance. No eye need watch his actions. No inspector can intrude upon his operations. By section 13, a constable may on a warrant obtained from a Justice of the Peace on information upon oath enter any



building in order to carry into effect the provisions of the Act, but that is only where the suspected person holds no license. From such an invasion on his privacy the licensee is free. The existence of the laboratory in his house with its appliances, its victims, and its instruments, affords no ground for investigation. The use of them all is sanctioned by law. In vain might his neighbour on oath state to a justice, that, having heard the cries of animals in pain, he had reason to believe that anæsthetics were not being administered in accordance with restrictions 3 or 4, and that the vivisector had no certificate authorising him to dispense with their use. The answer would be that he held a simple license, and that, though the belief of the informant might be well-founded, an Englishman's home is his castle.

True, the Secretary of State by section 7 may insert, as a condition of granting a license, a provision that the place in which any experiment is to be performed by the licensee is to be registered, but as we have seen, this is purely optional. If he inserts this provision, by section 10 it is provided that—

“The Secretary of State shall cause all registered places to  
 “be from time to time visited by inspectors for the  
 “purpose of securing a compliance with the provisions  
 “of this Act.”

But there is no provision that the inspectors shall be there during the performance of the experiment; no compulsory notice to be given by the operator to the inspector of the time at which the operation is to be performed; and a minute inspection of the laboratory, vivisection trough, and instruments, when the operator was *not* performing an operation would do nothing to secure a compliance with the provisions of the Act.

Such is the position of the simple licensee. The position of the holder of a certificate is governed by the provisoes.

They are as follows :—

- “1. Experiments may be performed under the foregoing  
 “provisions as to anæsthetics by a person giving illus-  
 “trations of lectures in medical schools, hospitals, or  
 “colleges, or elsewhere, on such certificate being given  
 “as in this Act mentioned, that the proposed experi-  
 “ments are absolutely necessary for the due instruc-  
 “tion of the persons to whom such lectures are given  
 “with a view to their acquiring physiological knowledge,  
 “or knowledge which will be useful to them for saving  
 “or prolonging life or alleviating suffering; and
- “2. Experiments may be performed without anæsthetics on  
 “such certificate being given as in this Act mentioned,  
 “that insensibility cannot be produced without neces-

“sarily frustrating the object of such experiments;  
“and

- “3. Experiments may be performed without the person  
“who performed such experiments being under an obli-  
“gation to cause the animal on which any such experi-  
“ment is performed to be killed before it recovers from  
“the influence of the anæsthetic, on such certificate  
“being given as in this Act mentioned, that the so  
“killing the animal would necessarily frustrate the  
“object of the experiment, and provided that the  
“animal be killed as soon as such object has been  
“attained; and
- “4. Experiments may be performed not directly for the  
“advancement by new discovery of physiological know-  
“ledge, or of knowledge which will be useful for  
“saving or prolonging life or alleviating suffering, but  
“for the purpose of testing a particular former dis-  
“covery alleged to have been made for the advance-  
“ment of such knowledge as last aforesaid on such  
“certificate being given as in this Act mentioned, that  
“such testing is absolutely necessary for the advance-  
“ment of such knowledge.”

The practical effect of these provisos is to override the restrictions already imposed, and to deliver the animals over under the sanction of a certificate to be operated upon by vivisectors. Nor is there any provision by which the public may know who are, and who are not, the holders of these licenses and certificates, which give such scope for the practice of vivisection. All may be shrouded in the most profound secrecy.

In the first place Proviso 1 continues to draw the distinction which is observed throughout the Act, between physiological knowledge, and knowledge which will be useful for saving or prolonging life, or alleviating suffering, which restriction 1 has already drawn, and permits vivisection to be practised by way of illustration of lectures, the object of which is to impart physiological knowledge wholly unconnected with any useful or humane purpose. Nor would experiments illustrating lectures as a rule be performed, save for the necessary purpose of the due instruction of those who attend them.

In the next place the question arises may a vivisector who has obtained a certificate under Proviso 1 go further and obtain a certificate under Provisoes 2 or 3 and operate, by way of illustration of lectures, without anæsthetics, or, if an anæsthetic is used, without the obligation to kill before the animal has recovered from its influence? Possibly, nay probably, the Act intended all operations in public by way of



illustration to lectures to be performed under anæsthetics, and with the obligation to kill. But has it said so? This is a penal Act, to be construed, therefore, according to the usual rule, most strictly in favour of the accused, and if an operator had added to his certificate under Proviso 1, a certificate under Provisoes 2 or 3, or possessed a certificate covering both provisos, and had operated without anæsthetics, by way of illustration to lectures, or, if an anæsthetic had been used, had not killed the animal before recovery from its influence, I do not think that the prosecution could hope for a conviction. In answer to the argument that all operations by way of illustration to lectures are prohibited by restriction 5, and that the only proviso enlarging the restriction in the case of experiments so described provides that anæsthetics must be used, he could appeal to his certificate under Provisoes 2 or 3, which are general and unqualified in their terms.

And further, there is nothing to prevent a vivisector holding a certificate under Proviso 1 signed by A. and B. in accordance with the provisions of section 11 obtaining a fresh certificate for the dispensing with the use of anæsthetics signed by C. D. if A. B. should think that there was no reason for the dispensing with them. Doctors proverbially differ! And who that has read the literature of the subject but will recollect the evidence contained therein as to the difficulty of applying anæsthetics thoroughly, and regulating their force and the duration of their effect; and as to the large class of experiments, where a vivid sensation, or, in other words, a lively feeling of agony being essential to the desired object, anæsthetics frustrate that object?

Armed with a certificate under Proviso 2, there is no limit either to the acuteness or continuance of the pain which a vivisector may inflict, not only for the purpose of acquiring knowledge which may be useful for saving or prolonging life, or alleviating suffering, but of acquiring physiological knowledge unconnected with such use. And if he also obtain a certificate under Proviso 4, all this not only holds good but also applies to him if he wishes to test a former discovery, alleged to have been made, and which is also wholly unconnected with any humane or useful purpose. Students of the subject are aware that an enormous proportion of experiments are of this very class, and are undertaken for the mere purpose of controversy.

Many experiments involved protracted agony, and, to permit of their performance, we have Proviso 3. And here again the certificate dispensing with the necessity of killing



may be, probably will be, held with some or all of the certificates under the other provisoes.

Thus we see that the holders of certificates may by law inflict upon animals the severest cruelties of which the mind of man can conceive by experimenting upon them alive, provided that the administering of anæsthetics, or the killing of the animal before their effect has passed away would frustrate the object of the experiment, and that it is performed with a view to the advancement of physiological knowledge *or* knowledge which will be useful in saving or prolonging life or alleviating suffering, or in order to test some former discovery alleged to have been made with that view. Nor does the Act place any limit to the number of animals which may be sacrificed, whether under the sanction of a license or a certificate.

Such power being given to a vivisector by the Act, from whom are these certificates and licenses to be obtained? Bearing in mind the opinions held by the bulk of the medical profession and by many of the scientific professors, we find that the signatures of medical men and scientific professors alone are necessary to the applications for licenses and certificates. The intending vivisector has indeed a large field from which to choose, and he will have no difficulty in finding many who will hold all the opinions which I have ascribed to those who approve of vivisection.

I quote here what the Act says as to the persons from whom licenses and certificates may be obtained, subject to the discretionary power of the Secretary of State to grant or withhold them. But of course he would think any applicant whose application was duly signed, "qualified" under section 8. By reading its terms on this head with the provisoes we may see the general effect of the law.

By section 11 :—

"Any application for a license under this Act and a certificate given as in this Act mentioned, must be signed  
"by one or more of the following persons, that is to  
"say :—

"The President of the Royal Society.

"The President of the Royal Society of Edinburgh.

"The President of the Royal Irish Academy.

"The Presidents of the Royal Colleges of Surgeons in London, Edinburgh, or Dublin.

"The Presidents of the Royal Colleges of Physicians in London, Edinburgh, or Dublin.

"The President of the General Medical Council.

"The President of the Faculty of Physicians and Surgeons of Glasgow.

"The President of the Royal College of Veterinary Sur-

“geons, or the President of the Royal Veterinary College, London, but in the case only of an experiment to be performed under anæsthetics, with a view to the advancement by new discovery of veterinary science, and also (unless the applicant be a professor of physiology, medicine, anatomy, medical jurisprudence, materia medica, or surgery in a university in Great Britain or Ireland, or in University College, London, or in a college in Great Britain or Ireland, incorporated by Royal Charter) by a professor of physiology, medicine, anatomy, medical jurisprudence, materia medica, or surgery in a university in Great Britain or Ireland, or in University College, London, or in a college in Great Britain or Ireland incorporated by Royal Charter. . . . A certificate under this section may be given for such time, or for such series of experiments as the person or persons signing the certificate may think expedient.”

The general effect of all this legislation may be thus far good. It may prevent the obscure aspirant after the treasures of physiological knowledge, who is unacquainted with any of these learned men, from vivisectioning.

But it is difficult to believe that any man, however obscure, who impresses any two of the persons whose signatures are necessary with an idea of his earnestness in the cause, will receive a rebuff. And further, it must not be forgotten that it is by the learned and best known scientific men that the greatest cruelties are practised. The medical profession is banded together in opposition to the anti-vivisection movement, and these learned officers can all countersign each other's application.

By section 4 :—

“The substance known as urari or curare shall not for the purposes of this Act be deemed to be an anæsthetic.”

The received opinion with respect to curare is that it prevents all muscular movement, but does not prevent the feeling of pain. Indeed it is believed to increase that feeling. Its use is here made perfectly lawful. The simple licensee may use it, remote from all observation. He may use it in conjunction with an anæsthetic, and if he be careless in observing when the effect of the anæsthetic has passed away leaving the animal still under the influence of the drug which makes it conveniently silent and motionless, who shall correct his carelessness? Indeed it is impracticable in the case of a totally paralysed and motionless creature to ascertain when an anæsthetic takes effect. Thus curare makes anæsthetics useless. The holder of a certificate dispensing with the use of anæ-



thetics may likewise use this terrible substance at his discretion. He may still the cries which would otherwise distract and shock the nerves of his neighbours, or of the members of the class before whom he is operating by way of illustration.

The next question is what animals may, and what may not be operated upon?

By section 5 :—

“Notwithstanding anything in this Act contained, an  
 “experiment calculated to give pain shall not be performed without anæsthetics on a dog or cat, except  
 “on such certificate being given as in this Act mentioned, stating, in addition to the statements hereinbefore required to be made in such certificate, that  
 “for the reasons specified in the certificate the object  
 “of the experiment will be necessarily frustrated  
 “unless it is performed on an animal similar in constitution and habits to a cat or dog, and no other  
 “animal is available for such experiment; and an  
 “experiment calculated to give pain shall not be performed on any horse, ass, or mule, except on such  
 “certificate being given as in this Act mentioned that  
 “the object of the experiment will be necessarily  
 “frustrated unless it is performed on a horse, ass, or  
 “mule, and that no other animal is available for such  
 “experiment.”

At first sight this section seems to be intended to spare dogs, cats, horses, asses and mules—viz., those animals which are most domesticated, and which feel pain most acutely, from vivisection, where other animals will serve the purpose. And the side note is in these words :—

“Special restrictions on painful experiments on dogs, cats, &c,”

But what is the real effect of the section? Special restrictions indeed it places in the case of horses, asses, and mules. No person without a certificate complying with the terms of the section can experiment upon them at all, with or without anæsthetics. But dogs and cats, the most highly organised, and the most sensitive to pain of all animals (specially useful, therefore, in cases where the nerves are the objects of study), are handed over with no *special* restrictions at all to the simple licensee! They are naturally the favourite victims in those private laboratories, where, screened from public scrutiny, without fear of visits from inspectors, the professors can carry into effect their physiological investigations.

Finally by section 21 :—

“A prosecution under this Act against a licensed person  
 “shall not be instituted except with the assent in  
 “writing of the Secretary of State.”



Thus, even the enforcement of the provisions of the Act is left discretionary, though perhaps there is not much fear but that public opinion would demand that the assent should be given, if good cause were shown to believe that the Act had been materially infringed. Still consent may be legally refused.

Such is my interpretation of the law since the passing of "the Cruelty to Animals Act, 1876," 39 nd 40 Vict., cap. 77. I do not here suggest what alterations the law ought to receive. I have confined myself to giving a short statement, free, I hope, from ambiguity, of what can, and what cannot be done under the Act.

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